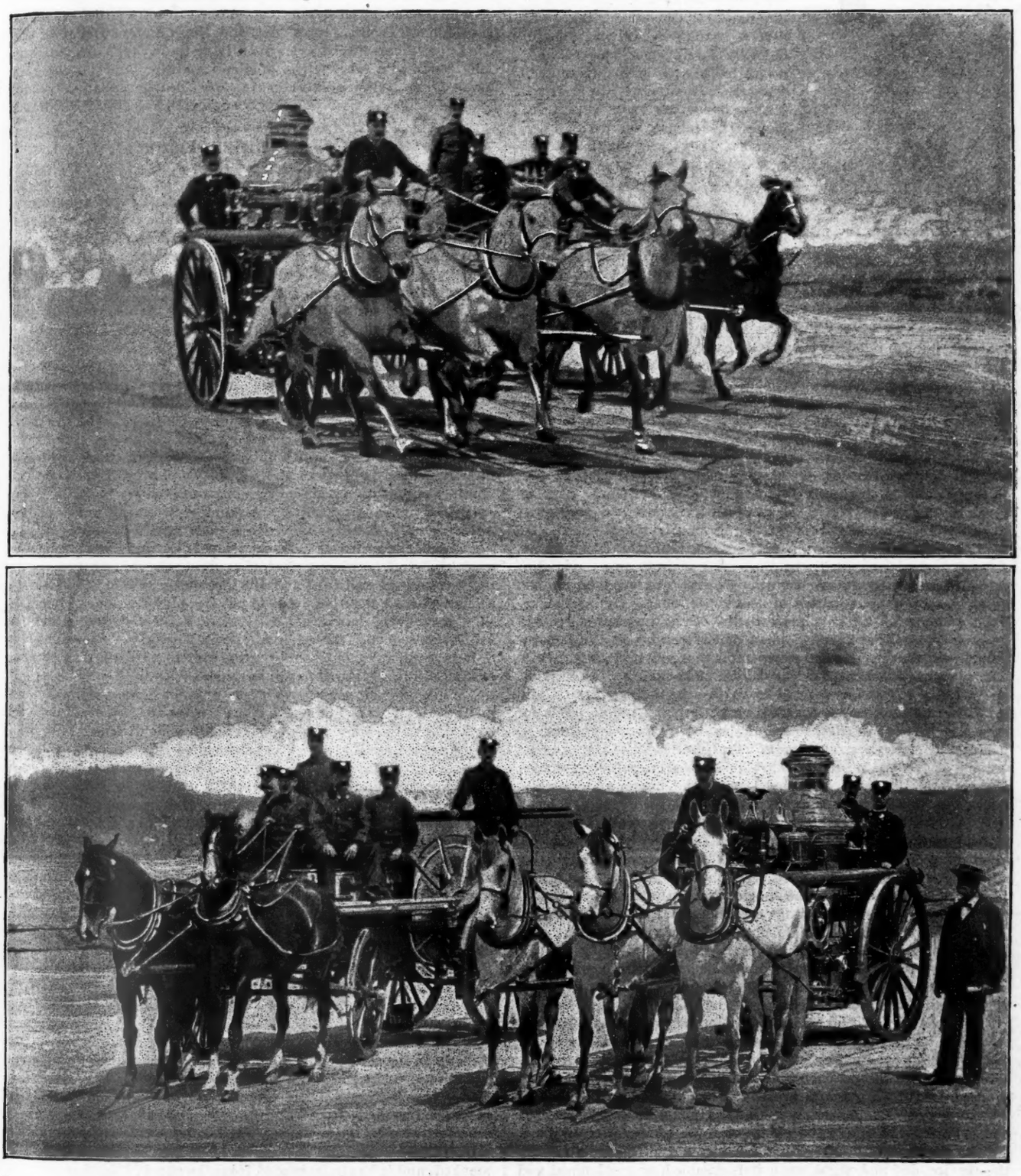
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME LII.—No. 10. NEW YORK, OCTOBER, 1893. NEW SERIES—No. 561.



FIREMEN AND TEAMS OF THE NEW YORK FIRE DEPARTMENT.

COPYRIGHT, 1893, BY ORANGE JUDD COMPANY.

HORSES OF THE NEW YORK FIRE DEPARTMENT.

DR. A. S. HEATH.

THE Fire Department of New York city possesses as a part of its equipment over four hundred horses, all of them superb animals, adapted to the trying work of drawing the engines and trucks at high rates of speed through the tortuous and often crowded streets. The work is of a nature that requires good form, perfect soundness, activity, a high degree of intelligence, courage, and a long course of special training. These horses vary in height from sixteen hands one inch to sixteen hands three inches, and weigh 1,300 pounds. They are purchased at ages ranging from five to seven years, though an exceptionally fine horse, four years old, is sometimes taken, and set for a time to the lighter classes of work. But no purchases are made until after rigid and systematic inspection. A high officer of the Fire Department has special charge of this work. He is a skilled veterinarian, with large experience in the handling and training of horses for the required purpose. Every horse is judged wholly by its individual qualities, no pedigrees being called for or given. The proportion of horses accepted cannot be given with exactness, as no record is kept of the rejected, but probably not more than one out of eight or ten of those offered comes up to the high standard required. The price paid for those which are accepted is $300 each. Dark colors are preferred. A long and skillful course of education is required to fit these horses for the peculiar and exacting work demanded of them. When a horse, having passed the rigid inspection, is accepted and purchased, it is sent at once to the "training school," where it receives an admirably-conducted course of special treatment. The utmost kindness and patience, with firmness and decision, are used. No whipping, rough treatment, shouting or profanity are tolerated in the stables or engine houses of the department. Each horse is taught to know its stall, its place in the team, the meaning of all the gong signals, and every incident of the start from the house; to move swiftly through the streets, and to stand staunchly in the vicinity of a fire and surroundings of the most exciting and terrifying character. The horses must learn to take their food with bits in mouth, for they have to stand bitted day and night, while in active service. At the first sound of the alarm gong every horse is liberated by electricity from its stall, and springs to its place beside the pole of the engine or truck. The harness, which is kept suspended directly above, is dropped upon the horse, and quickly secured to it. Then the horses must stand firmly but eagerly expectant until the signal "Go!" is sounded, when all plunge out of the open doors into the streets, and gallop with all possible speed wherever guided by the reins in the firm and steady hand of the skillful and experienced driver. The horses take as eager and intelligent an interest as do race-horses on the turf or the track.

The average period of service for a horse in the New York Fire Department is about eight years, or double that of street-car and omnibus horses. The work is severe, rapid, and may come at any hour of the day or night; but the intervals of rest are long, during which the horses receive the kindest and most judicious treatment. The food consists of sweet, clean hay, sound, plump oats, and freshly-ground wheat bran. Their rations are abundant at all times, but never profuse. When sick, lame or injured, they are immediately sent to the hospital, where they receive the best professional treatment. When permanently incapacitated for duty by age, or other cause, they are sold at an average price of fifty dollars, being still good service horses for almost any kind of general work. Reserve horses are kept to supply the places of those temporarily disabled, but no duplicates — that is, every horse is kept continuously in the service, day and night, until it is disabled, or condemned and sold. About fifty horses have to be purchased every year to keep up the number required for the Department. Of their breeding little is definitely known, but the qualities required necessarily implies the possession of some good strains of blood. New York's Fire Department is the pride of the city, and is unsurpassed by any similar department in the world. The system of discipline maintained, under which promotion rests upon merit alone, inspires the members with a high degree of zeal, ambition and *esprit de corps*. The methods of purchase, education and maintenance of the horses are in full harmony with those which prevail throughout the entire Fire Department.

The engravings in the frontispiece are from photographs taken expressly for the AMERICAN AGRICULTURIST. This work was greatly aided by the officers of the Department, who spared themselve no trouble in their courteous efforts to afford the best facilities. John J. Scannell, president, and Hugh Bonner, chief of the Fire Department, placed every facility at the writer's disposal, and Chief Shed, who has charge of the inspection and purchase of horses, Captain Binn and others, rendered hearty and effective aid. To all of these the writer's acknowledgments are hereby rendered.

WHEAT-RAISING IN THE SOUTHWEST.

J. M. RICE, OKLAHOMA.

Near the Missouri river, wheat and corn hold about equal rank, but in the newer Southwest wheat-raising is the principal business. With even the first crop in the newer portions, several headers, binders and steam threshers are required for each township, and in the older region a dozen steamers can be seen at work from one point of view. Before the headers have left the field, the plows are often started in preparation for another crop. While perhaps the majority of farmers use walking plows, yet they are nearly all sixteen-inch, steel-beam, three-horse plows. A great many use the tricycle riding plows, and a large number the four and six-horse gang plows. The best wheat lands are the smooth prairies and the level, though somewhat winding, valley lands; and it is quite easy to handle this number of horses on these large plows in the usual half-mile furrows.

In the somewhat dry climate, there are sometimes periods of three to six weeks in which it is too dry to plow, so that if the soil should be in proper condition there is a necessity to start the plows at once as soon as the grain is cut, and the plowing is continued, at intervals, up to January, or in rare cases until February. Where there is not too great a rush, each day's plowing is harrowed, wide steel lever harrows being used, thus fining the soil, preventing the rapid escape of moisture and the formation of clods, but this is often neglected as the desire is to get the plowing done, when possible, leaving the harrowing until after light showers. After the soil is once deeply stirred, many will only plow once in three or four years, using in the interim the four to six-horse disk harrow, cutting deep and throwing soil as much as possible.

While all manner of seeding is practiced, yet the large press drills are in most common use, as they press the loose soil over the seed. As to the amount of seed there is a wide diversity of opinion and practice, and years of experiments will be necessary before there is any uniformity. Different soils and times of seeding are factors in the question, so at present it runs from twenty-four to forty-four quarts per acre. The time of seeding would be easily settled if the character of the weather in the following April and May could be foretold. The seeding season, however, extends from September to February, and if there should be an abundance of moisture there will be but little difference in the yield. The first sown will give much pasture during the open, dry winters, and this is an important item. Harvest commences about May 20th, and while most farmers prefer to have their own binders so as to cut just when it suits them, yet many hire everything done, and these usually employ a heading outfit, which furnishes a header with its four to six horses, three to four header boxes with the necessary teams, board themselves, and put the dry, well-matured grain in the stack for $1.25 per acre.

This wheat has to be well ripened before heading, as it goes directly in the stack, so it can be threshed at once if so desired, and sometimes we see the steam thresher at work next day. Here there is also, in many cases, a complete outfit, even to kitchen and dining-room, convertible at night into sleeping apartments, and on wheels drawn by the steamer. The farmer furnishes nothing, only a bin for the grain, and pays seven cents per bushel, or if it is not stacked, and it has to be hauled from the shock, it is nine cents per bushel. If the farmer wishes to haul in the shocks, he is paid the same day wages they would have to pay others. In the older States there are many points in wheat culture fairly well settled,

but in the Southwest it is largely experimental, though the newer settler should plow as early as possible, fine the soil, get clean seed of the best variety, sow forty quarts per acre about October 1st, using a press drill. If the wheat makes a good growth, pasture it in dry weather. Cut with a binder. Thresh with a machine that has the least cash outlay. Care for the straw for feed and mulching, and he will not go far wrong. Thus he has time to learn more fully by observation and experience, but with the local elevator market at thirty-eight to forty-two cents per bushel he will not be able to realize a very large profit, depending somewhat upon the yield, which last year ranged from nine to sixty-two bushels per acre.

WINTER STORAGE OF FARM IMPLEMENTS.

J. M. STAHL, ILLINOIS.

Upon storing farm implements in proper condition depends, in no small degree, the success of farming. The man who provides a dry, airy shelter for farm tools and machines, and puts them in it when they are not in use, has done a wise and profitable thing; but he may have done only half of what he might and should do for the preservation and good work of his tools and machines. He should also put the tools and machines away in good condition. This includes freedom from dirt. The plow, for example, put away coated with mud, will rust and rot, though in a good shelter; and such a coating is yet more harmful to the delicate parts of machines. Though bright steel surfaces are clean, they will probably rust, unless coated with oil in some form; and to be sure that even clean wood does not rot, one must coat it with paint or oil. For coating metal surfaces coal oil or beef tallow is good. Of course the tallow should be applied in a liquid condition. It will pay to coat rough, but unpainted, metal surfaces as well as polished ones. For farm tools and machines, mineral paint is better than artificial pigments, and brown mineral paint is very cheap indeed. Anyone ought to be able to mix it—use only boiled linseed oil, and the best is certainly the cheapest; or one can buy ready-mixed paints of good quality at reasonable prices. One should have two brushes—a large one for ordinary surfaces, and a small one for narrow surfaces or small corners. It is advisable to put away all tools and machines in condition for work—plows, hoes, harrows, or sickles, sharp and with all breaks repaired and weak parts strengthened. There will be more time for this at the close than at the beginning of the season's work; and then one has the comforting assurance that as soon as the season permits he may begin work. When one puts away the implements just as they leave the field, it is often found that it has been forgotten that some must be mended and others sharpened, and this is not recollected until they are brought out for work; then valuable time must be lost in going to the blacksmith.

KEROSENE EMULSION FOR SHEEP TICKS.

J. S. WOODWARD.

Six lively sheep ticks will make the existence of a lamb perfectly miserable, and a dozen will ruin all hope of profit in lamb feeding, however generous the ration. From careful observation I am sure that sheep ticks annually cause more loss to American flock owners than all other sheep parasites combined. As soon as the flock is shorn all the ticks go from sheep to lambs, and thereafter the poor things have a hard fight for existence. I was once offered a bunch of lambs very cheaply, which the owner said were all "run down." A careful examination satisfied me that their only trouble was "ticks." This was late in the fall, and after buying them I had them at once shorn. On one lamb were found over 1,000 ticks. After their fleeces were off, the lambs averaged less than twenty-eight pounds each. I treated them for ticks, fed through till spring, and sold them with an average weight of eighty-two pounds, making more clear profit per head on them than upon any sheep or lambs fed before or since.

We may tell flock owners to dip in this, that, or the other preparation, many or all of which are sure death to ticks, but the average American shepherd will not do it. He has not the conveniences and it takes too long, and he regards it as altogether too much trouble for the man with from twenty-five to two hundred sheep. I have tried a score or more of remedies, but after all have only recently experimented with the kerosene emulsion. Its virtues are that it is cheap, easily applied, perfectly harmless, and a dead shot to ticks. To make the kerosene emulsion, put into any convenient receptacle soft water and soap in the proportions of one gallon of water to half a gallon of soft soap, or half a pound of any good hard soap shaved up into slices. Stir well and when the soap is all dissolved and the whole boils, add two gallons of common kerosene, immediately stir or agitate violently the mass until it mixes and looks a good deal like cream. It takes about five minutes of lively work to do it well. When thoroughly emulsified, add as much soft hot water as there is in emulsion, and thoroughly stir the whole together. It may now be kept any length of time ready for immediate use, and will readily mix with any quantity of cold water, soft or hard, although rain or other soft water is much the best. The emulsion mixes much more readily and with half the labor, and remains more permanent when soft water is used. With hard water add more soap or a little washing soda.

To apply to the flock, take one gallon of the emulsion thoroughly stirred for each ten sheep, and add to it four gallons of soft water. If warmed it is better. Crowd the sheep into some corner or pen so as to bring them into a compact body, and having well mixed the emulsion with an ordinary force pump or a common tin sprinkler, spray or sprinkle the flock until thoroughly wet. In order to reach every part of every sheep, the flock should be occasionally stirred around, or made to change places, exposing all parts to the action of the emulsion. There need be no fear of using it too freely, as no harm will accrue to sheep or wool if twice the quantity or twice the strength be used. Nor will it injure their eyes if it happen to get into them, or harm the sheep if swallowed; in fact, it is an excellent vermifuge.

As will be seen, each gallon contains but two-sevenths of a gallon of kerosene, and as this treats ten or more sheep its cost is merely nominal, as in few places does kerosene in quantities cost as much as ten cents per gallon. It is equally destructive to lice on horses, cattle or hogs, and used at double the above strength is valuable to spray the henhouse. If sprayed or sprinkled over the hens at night while on the roosts, about once a month, there will never be a louse on the hens or in the house. With this remedy so cheap, so readily obtained, and so easily applied, the flock owner who lets his sheep or lambs be eaten up alive with ticks, and thus neglects to provide for his own, is worse than a heathen.

OSIER AND OTHER WILLOWS.

H. NICHOLAS JARCHOW.

Among the many species of willows which are indigenous to North America, there are only a few which prove fully adapted to the manufacture of the finer willow ware, and while none of these appear to be capable of furnishing material for the finest ware, many may be used for general purposes and for common or coarser work. This climate, abounding in extremes, may not be fully congenial to the production of the best osier willows; however, by suitable cultivation and the application of proper means to obviate the extremities of our climate, we may be enabled to produce such material as will satisfy our basket makers, who are now, to a large extent, dependent upon foreign importation. Those that seem to promise success under cultivation are:

1. *Salix amygdaloides*, responds to the *S. triandra* or *amygdalina* of Europe.

2. *S. alba*, white willow, corresponds in its variety, *S. vitellina*, to the European *Salix alba*, or *vitellina*.

3. *S. purpurea pyramidalis*, red osier, imported from Europe, has succeeded here fairly well. It is a tall shrub, of about ten feet in height, and is cultivated here for basket rods.

4. *S. viminalis* is the osier willow of Europe. This climate does not agree with it. But its hybrid, *S. Smithiana*, stands the winters well.

5. *S. gracilis*, on wet soil in the Western prairies, is grown for basket making.

The fact that many species of the willow are found on moist soil and near running water, has led to the belief that the willow is a so-called aquatic plant. This is entirely erroneous. The willow grows best on elevated grounds, the sprouts, or shoots, becoming more flexible than when raised on wet soil. However, the willow requires a certain degree of moisture within the reach of its roots, in order to develop a vigorous growth. If the preparation of the soil and the after culture is properly done, the usual moisture from the air and in the subsoil suffices to fully keep up a strong growth. On the other hand, it is a fact that the willow is capable—and this is one of its many advantages—of enduring a superabundance of moisture in the soil better and for a longer time than any other cultivated plant. Stagnant water in the soil will not only prevent a healthy growth of the willow, but is certain to soon kill it. A very

porous, sandy soil does not agree with many broad-leafed kinds. The culture of the willow in holts, or groves, for basket making of the finer sorts cannot be made profitable unless the ground be thoroughly prepared to a depth of about eighteen inches. By deep plowing and subsoiling the subsoil will be sufficiently opened, and the weedy surface so completely buried, that the weeds are killed, both objects being the conditions without which every prospect of success is cut off. Where the subsoil consists of sand, ditching may be confined to a depth of from twelve to fourteen inches. Localities which are liable to be covered during summer with stagnant water should be drained by open ditches, not by the usual drain tiles, as the strong roots of the willows would soon destroy, or, at least, displace and choke the pipes. Where full drainage cannot be had, for instance, in swampy or peaty plains, raised lands should be formed of from forty to fifty feet wide, leaving between them three-foot ditches, by which the water that collects above the impenetrable subsoil is carried off and the water level lowered about fourteen inches. The preparation of the ground should be finished in the fall preceding the planting, in order that the subsoil, which is lying on top of the ground, may be benefited by the exposure to air and frost during the winter.

Willow planting is best done early in spring, when the frost is out of the soil and the ground can be worked. Twigs of last year's growth, taken from the stock in the previous December, and kept in bundles without protection during the winter in a dry, cold and dark room, are cut in pieces about fourteen inches long, excluding the lower dry part of the rod and the slender upper part, and, somewhat inclined, are pushed so far into the soft bed that the top bud or eye is even with the surface soil. After the shoot is started, earth should be drawn up to fully cover the cutting; it will soon make its appearance again, and thereby avoiding the dangers that beset the tops from insects when left uncovered. Close planting produces better rods, but necessitates the use of hand labor in after culture. A distance of four inches in the row by twenty inches between the rows would allow working between the rows and give the required shade to keep the soil moist and free from weeds.

FIG. 1. PERSPECTIVE VIEW OF REAR OF COTTAGE.

Nothing is more detrimental to a willow plantation than the growth of weeds. Deeply plowed holts, it is true, will not be so much troubled by weeds in the first year, but even then during late summer they will appear. They should be subdued by shallow cultivation so as not to disturb the small rootlets. Hilling up the soil around the young plants should be done at the same time. In later years weeds are mostly suppressed by the shade caused through the dense growth of the stocks. But should weeds come up, they must be removed and the ground must always be kept mellow. During the second and third years weeding and cultivating the soil should be continued. Plants which have died must be replaced either in fall or spring, not by inserting cuttings, but by using strong rods. These are driven into the soil so that the but ends penetrate from twelve to fourteen inches into the ground.

In the first year osiers do not make much growth, but, nevertheless, the shoots, although not furnishing salable material should be cut late in the fall when the leaves have been dropped. This operation will give a good opportunity for cleaning and cultivating the ground thoroughly. The cultivation should still be shallow, not deeper than two inches, else the roots of the plants will be injured. From the second year valuable material for basket making is produced. The best time to cut the rods is after the fall of the leaves, during the winter months. This holds good for every species of willows, whether trained to trees as pollards, or to shoots. Osiers should be cut every year so that no sprouts remain. The shoots should be cut horizontally close to the stock and the earth temporarily removed from the stock when some shoots have sprouted below the surface soil. If cutting is done slantingly, there remain some eyes on one side of the stump of the shoot which would push out next year, but weak rods. This should be avoided, and only such rods allowed to grow which are pushed out from the root stock itself with a vigorous growth.

After the rods are cut during the winter they may be peeled by renewing the run of the sap, this being necessary to the peeling. There are different methods of inducing the run of the sap, of which the best and cheapest is to bind the rods in suitable bundles so that the but ends are even, and keep them in three inches of water until the eyes of the rods have developed into little leaves. The rods are then squeezed through wooden or steel pincers, and by a turning of the hand the bark is so completely loosened that a child is able to separate the bark from the wood. In this condition they have to be protected against rain and dew. The peeled rods are thereupon placed upon a rack and exposed to the air and sun. After a couple of days they are dry enough to preserve their elasticity. They are then collected in small, loose bundles, and for a fortnight placed in a room where neither dust nor dirt can spoil them. After that time they are assorted, tied up closely in larger bundles and carefully stored or sent to market. They are moistened when used. As regards the profitableness of the osier willow culture, there is no doubt that in localities with the proper soil cultivation and mode of harvesting, much may be expected, especially if hand labor can be secured cheaply. But one should not engage at once in the business on a large scale. In countries where the willow culture flourishes, only such areas are devoted to this culture which cannot be profitably employed in any other industry. The osier willow reaches the greatest production in the third year, aud with proper care and good fertilizing, either by manuring or by silting from overflowed water, the roots will continue to yield good crops of rods for many years. The red osiers, though yielding less, are considered the most valuable, with numerous thin, pliant rods, without branches, being especially adapted for wattling and binding, and growing well on both moist and dry soils.

SHORT FURROWS.

MARION RAMBO.

Honest toil is essential to restful slumber.

The man who impoverishes his farm steals from his own pocket.

That man is seldom happy who holds a grudge against the earth.

I count him a rascal who tries to get full work out of a half-fed horse.

Many people ride "over the hill to the poor-house" in the do-nothing sled.

The road to fortune is well traveled, but too many are headed in the wrong direction.

Some men have sense enough, but are too indifferent to go to the trouble of using it.

Those whose experience has been the most valuable are usually the slowest to give advice.

The man who loves his farm too well to neglect her, will win her smiling favor in laughing harvests.

He is to be pitied who is the slave of his work. He is not a free man who is not the master of his own work.

A CONVENIENT RURAL COTTAGE.

D. COMINGS.

To build an attractive home on a new farm site requires considerable careful thought. To so place the house that it shall be conveniently situated relative to the highway, and to have it a central retreat from the farm labors, is one problem; another is to have the house well grouped with the outbuildings, and possessed of a character pleasing to the eye and in harmony with the general landscape. A very plain exterior, when well screened by old trees or relieved by varied natural surroundings, will pass criticism and be more homelike in aspect than when in the midst of a treeless prairie, the monotony of which is only broken by its one diverting object, that will always receive closer scrutiny than when the house is set in pleasing surroundings. The design shown in the illustrations is for a farm or suburban cottage, which shall have a tasteful outline from any point of observation, and at the same time be compact and comparatively simple in form. It will stand gracefully alone, or become more cozy with the yearly growth of trees and shrubbery. The main building is thirty-three by thirty-six feet, covered with a hipped roof, with various minor projections, as indicated in the engravings, and of the size shown by comparing with the scale given. The interior is divided into well-arranged rooms, of a spacious, symmetrical appearance. By taking a position between the two front windows of the parlor, the suite of rooms in view may become as attractive as one desires, with proper judgment in decorating and furnishing. On either side of this room an open partition,

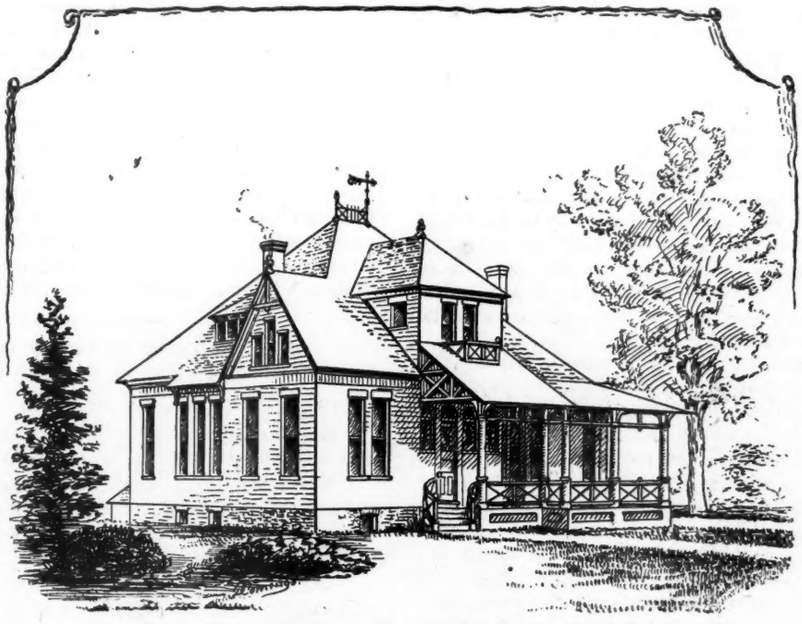


FIG. 2. PERSPECTIVE VIEW OF FRONT OF COTTAGE.

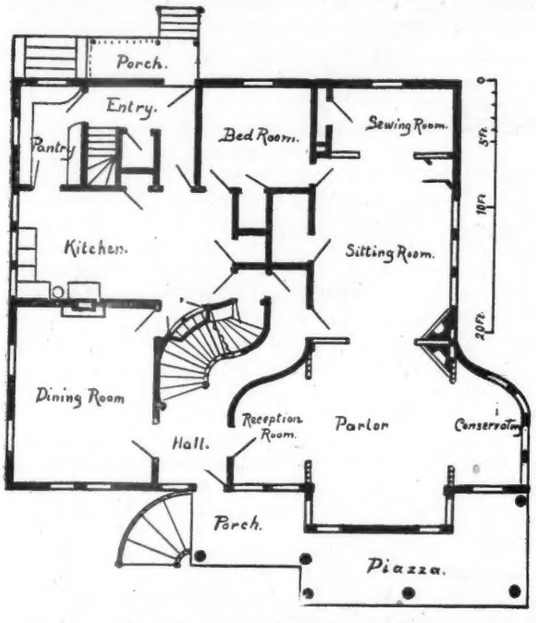


FIG. 3. PLAN OF FIRST FLOOR.

with grille and portieres, separate it from the conservatory filled with plants on the right, and the reception room, affording a good place for the piano, on the left. In the corner is a mantel fireplace, and a similar one in the sitting room beyond the folding doors, with a corner closet or cupboard opposite, form a bay of the three large windows. At the left side is a large closet, while at the rear is a small sewing room, shut off by folding doors, with another closet. This room may be used as a bedroom, and, in connection with the sitting room and the rear bedroom opening out of it, will make a convenient family suite of rooms on this floor.

From the front of the house, a broad hall opens out upon the spacious porch; the hall and the reception room at its right being lighted by colored glass windows. At the left is a good-sized dining room; broad stairs lead to the second floor, and at the rear is a door into the sitting room, and a cut-off passage leading to the kitchen and stairs to the basement or cellar. These stairs, being narrower than those above, afford space for broad shelves in the stairway, and also for a china cupboard in the corner of the kitchen near the dining room door, which opens so that it cuts off much of the noise of the kitchen, and closes the view entirely. The dining room has a fireplace, and the kitchen range is placed at the same chimney, with boiler, sink and tubs arranged along near the windows. The kitchen has two dark closets, and in the corner of the house is a large pantry, with two airy windows. An entry affords easy access from the rear porch to both kitchen and pantry, and has a large, dark storage closet by the side of the back stairs, which lead to the second floor. Upstairs are four bedrooms, with plenty of closet room, besides a bath room over the kitchen, a storage closet over the pantry, and an alcove over the parlor. The bedroom over the sitting room, with its alcove, closets, and adjoining bedroom, make very comfortable family quarters. The plan of the roof is indicated by the dotted lines, and is high enough for a ventilating loft above the chambers. The outside cellar entrance is

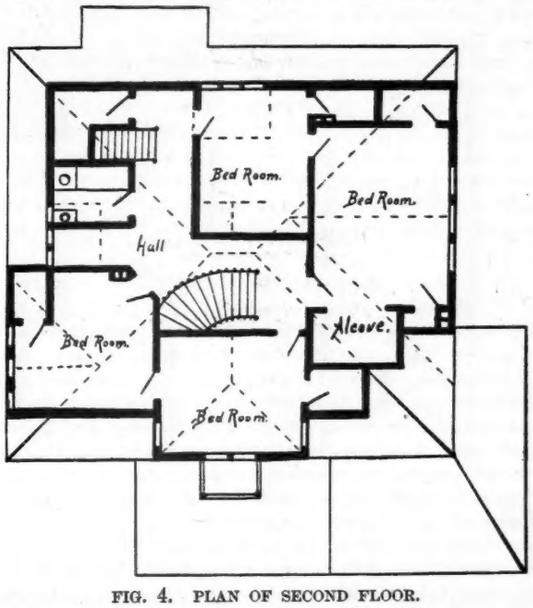


FIG. 4. PLAN OF SECOND FLOOR.

near the rear porch at the corner of the house. If the conservatory is not desired, it may be easily left out of the plan, and an angular wall and staircase in the hall will be less expensive than the curved style; the reception room being thus closed off from the parlor, leaving space farther back in the hall for a direct parlor entrance. [Our illustration Fig. 1 presents a perspective view of the rear of the cottage and Fig. 2 of the front of the same. The plan of the first floor is seen in Fig. 3, and that of the second floor in Fig. 4].

THE IMPORTANCE OF THE EGG RECORD.

J. WHILDIN, KANSAS.

Nearly all who raise poultry raise them for profit, and the pleasure derived from their beauty may be regarded as a secondary consideration. It is proper to recognize a standard of beauty in each breed and encourage the nearest approach to it, but usefulness should also be recognized, and some method should be adopted to stimulate the breeding of our fowls up to the highest point of profit. The method of awarding premiums according to performance has developed the modern dairy cow, and the world-renowned American trotter. The same method would doubtless develop the egg-laying qualities of poultry. The eggs laid during a full year after the fowl began to lay should be considered, but number alone is not the only desideratum. The sooner the pullet begins to lay the quicker the return. The greater the proportion of the egg crop gathered in winter when eggs are high, the greater the profit.

As most pullets, if well treated, are laying at eight months old, one year might be added to that time, and the exhibitors of poultry might keep and present a certified record showing when their fowls were hatched, when they commenced to lay, and how many eggs they laid each month until they were twenty months old. Judges of poultry could estimate the average value of fresh eggs during each month in the preceding year, and by those prices reckon the value of the eggs laid each month as shown by the record; those monthly sums added together would closely approximate the value of eggs laid by each hen during that time. Those records which excelled in value might be credited as many as thirty points in the scoring, ten might also be given for size and ten for condition, making fifty points out of the one hundred for those useful qualities, while all the other points usually considered, which are for appearance only, might make at their highest no more than the other fifty. After such a system had been in use a year, or more, a male fowl might be credited by his dam's record of egg production. This would involve the separation and careful watching of individual fowls, and would introduce the pedigree system into their breeding. But without a pedigree showing performance, and the selection of the most productive for breeding, we can make but little progress in improving our fowls as egg producers.

Each and every variety of pure-bred fowls are recommended as good layers, and most of them as good winter layers, but no reliable evidence is furnished to prove the recommendation. The advice is to get good males of pure-bred stock to improve the feathered flocks. The farmer, heeding the admonition, selects from the variety most highly recommended to him, and after one or two crosses is persuaded that another variety is better, and forthwith procures of that breed one or two cockerels which he again crosses on his mixed flock for a year or two, when glowing accounts of some other breed induces him to make another change, and yet others, until his much-crossed flock of fowls present every conceivable variety of size, shape and color, and he is yet groping in darkness for light on the egg question. Often he does not know which was his best cross, or whether his fowls were improved by any of the crosses. The use of the egg record and pedigree at exhibitions of fowls would tend to develop and bring out the best layers.

SHELTER THE STOCK.

Driving through the farming districts in autumn and seeing so many sheep, cattle and other stock exposed to the inclement weather, leads the observer to believe that the kind hand of mercy is not always extended to the dumb brutes. Some farmers think the animals are toughened to it. In a measure that is true, but the expense of this toughening process is excessive. Fall feed has not the life-giving properties in it that the summer growth has. Half the days in the late fall are truly inclement, and many of them decidedly so, and much of the time stocks have their coats water-soaked. They are also obliged to lie on cold, wet ground, and during storms huddle together, or crowd against a rail or board fence. All this is done and being done while at the barn and sheds is an abundance of unoccupied stalls and shelter. Some farmers think that soon as the stocks are at the barn, they must be feeding them the gathered crops. This is not so, and any farmer who carefully shelters his stock from the cold autumn storms is adding to their weight, preserving their health and bettering their condition. This is accomplished without feeding a single pound of fodder. There is also a great satisfaction in knowing that the dumb animals are safely and cozily sheltered. This may be accomplished by simply driving the stock back and forth, or allowing them free access to a friendly shelter. The latter is cheaply and readily built in almost any locality, by the use of poles and boards, or roofing over an excavation in a hillside. When the winds are piercing, even a tight board fence will prove an excellent wind-break.

PREVENTING CHICKEN POX.

Owing to his vigilance and the constancy of his labors in the earlier part of the year, the poultry raiser is apt to take things easier now, and liable to neglect to keep the coops of his chickens clean. But they need just as much attention now as ever,—more if there is any difference, for the amount of droppings increases with the size of the chickens. It is in unclean coops that the chicken pox usually appears. About the sides of the face and on the comb, wattles and earlobes, may be noticed scabs. If nothing is done for them, the disease sometimes so spreads as to make the head a solid sore, and even to destroy the sight and cause death. Remove the scabs and rub in dry sulphur twice a day. A few applications will usually effect a cure. In the South this disease is treated with an ointment of salt and lard rubbed into the sores. A few applications will suffice. A little sulphur in the food is helpful.

OCTOBER IN THE POULTRY YARD.

October is a good growing month.

Seeds are ripe, insects are not yet all gone, and the weather is just such as leads to rapid development.

Now is the time when the fowls should be pushed ahead. The chickens, during this favorable weather, should be induced to grow as rapidly as possible, to get as much size as can be attained before colder weather sets in.

The falling leaves, strewing the fields and the roadsides and drifting into heaps in the corners of the fences, and the coolness of the nights with an occasional touch of frost, are the plain indicators of severer weather soon to come. October sunshine cannot last.

If the grass begins to give out, try a few cabbages for the chickens and hens. Refuse cabbages, those that fail to make good heads, can be bought cheaply, and they furnish a needed and economical food. They will aid in the growth of the chickens and will save in the amount of grain to be fed.

The falling leaf serves other purposes than "to point a moral and adorn a tale." It, with its many companions, should be gathered to serve as litter in the poultry houses. Store the leaves away in some dry and sheltered place, and in cold weather sprinkle them thickly over the floors to scatter the grain among, and induce the fowls to scratch for a living.

Small potatoes may also be now secured, and these boiled soft and mixed with corn meal make a good growing and a good fattening food, useful for a morning feed, especially when fed warm. These cheaper, coarser foods give a needed distention to the digestive organs, and though analysis does not show them to be of a high nutritive value, yet they actually possess more worth than analysis indicates, and induce larger and more rapid growth, when fed in connection with other foods, than can be attained from more concentrated foods fed alone.

The cool nights that are the rule now, owing to the great difference in the temperature of the air at noon and at midnight, may produce colds or lead to a mild attack of distemper in the chickens. The coolness of the nights, also, may induce bowel complaints. Usually these attacks are very mild and need no special treatment, though it is not a bad plan to add a little sulphate of iron (copperas) to the water the fowls drink, just enough to give the water a brackish taste. This acts as a tonic to the system and tends to check any diarrhœa which may appear.

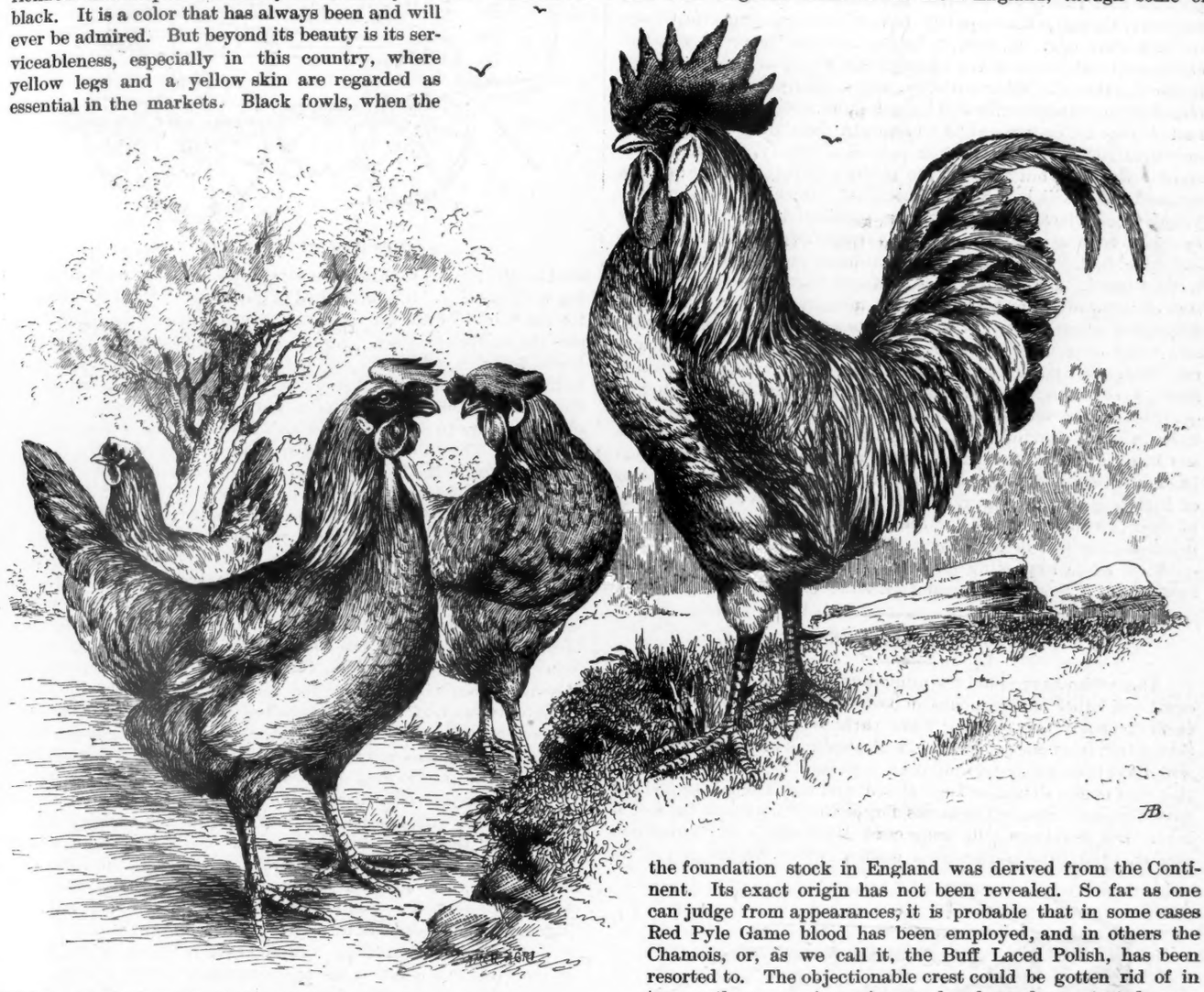
The earliest pullets should now be laying, and eggs are usually high at this time of the year. The extra attention that was needed to get them out early and the extra care they required for the first few weeks of their existence, will not be regretted as the poultryman gathers the eggs they lay. He will be glad that he took pains with them then, and this ought to lead him to take still greater pains with them now, because the return will be generous and immediate. See that the early pullets have all that is needed to encourage them in their meritorious labors. Plenty of food, good quarters, necessary variety—these comforts should be supplied.

BUFF LEGHORNS.

H. S. BABCOCK.

Buff colored fowls are now the fashion. This is a surprise to some poultry men, but ought not to be. The real surprise is that for so many years there have been so few fowls with a buff plumage. For years and years the Buff Cochin was the sole representative of this class. Then came the Pekin Bantam, which is but a dwarfed Buff Cochin. And now we have, in various stages of perfection, the Argonaut, the Plymouth Rock, the Wyandotte and the Leghorn,—yes, even the Brahma, with a coat of gold. There will soon be enough varieties of this color, at the present rate of progress, to suit the fancies of every class.

The buff plumage is both beautiful and serviceable. Among the solid colors in beauty it takes first rank. It has a softness and richness that surpass the beauty of the snowy white, or the lustrous black. It is a color that has always been and will ever be admired. But beyond its beauty is its serviceableness, especially in this country, where yellow legs and a yellow skin are regarded as essential in the markets. Black fowls, when the



TRIO OF HIGH-BRED BUFF LEGHORN FOWLS.

black is lustrous, have almost invariably dark or black legs. White fowls, if they have yellow legs and skin, show more or less yellow in the plumage, and this robs them of their beauty. But the yellower the leg and the skin of a buff fowl, the richer will be its plumage, or, to state the fact more accurately, the tendency will be in this direction. Hence, in breeding for the market requirements of yellow legs and skin, the breeder is also breeding in the direction of the most beautiful plumage. Then, again, the buff plumage is one that does not show stain or soil easily, and even when faded looks neat and attractive. A faded black is always ugly, and a faded white, if we may so call the loss of its peculiar frostiness through age, appears dull and dingy. But a faded buff has still a clean, neat, attractive appearance. And, again, when fowls are dressed for market, the pin feathers of a buff fowl disfigure the poultry to a much less degree than of almost any other color,—white, alone, being superior to buff, if, indeed, it be superior. When the buff fowl is bred to a lemon shade, the under color is very light and the pin feathers are nearly of the color of the skin. Take it all in all, the advantages of a buff plumage are so many and so great that the observation, "The real surprise is that for so many years there have been so few fowls with a buff plumage," seems fully warranted.

As might have been anticipated, a Leghorn with such a plumage has caught the popular fancy, and the sales of eggs and fowls at high prices have been numerous. The demand has outrun the supply and still continues strong. At first, almost any Leghorn with a fair approximation to a buff plumage could be sold, and birds that showed white tints, willow legs and even a bricky-red color were palmed off as Buff Leghorns. But the time has already arrived when better colored specimens must be had, and before another year rolls by the demand will be only for good buff fowls. The Buff Leghorn came to us from England, though some of the foundation stock in England was derived from the Continent. Its exact origin has not been revealed. So far as one can judge from appearances, it is probable that in some cases Red Pyle Game blood has been employed, and in others the Chamois, or, as we call it, the Buff Laced Polish, has been resorted to. The objectionable crest could be gotten rid of in two or three years' crossing, as has been demonstrated more than once. It is possible, I believe, to produce a Buff Leghorn by keeping strictly within Leghorn blood. In the attempt to make the Pyle Leghorn by crossing the Brown and White varieties, many snuffy-colored birds were produced, approximating to buff, and from which buff probably could have been produced. Crosses of the Partridge Cochin and Light Brahma—the former having nearly the color of a Brown Leghorn, the latter being mainly white—buff chickens have resulted. A cross of the Rose-comb Brown Leghorn and the Light Brahma has also produced buff fowls, resembling, in many respects, some of the so-called Buff Wyandottes which have been lately exhibited. With these facts in view, it does not seem necessary to resort to foreign crosses to produce a Buff Leghorn.

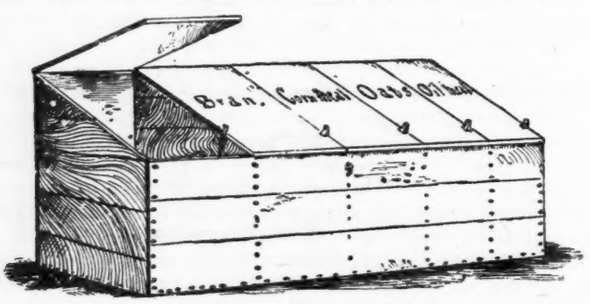
The Buff Leghorns which were exhibited at Philadelphia and New York last year, were really fine birds, some of them exceptionally so. Among them were leading winners at the great English exhibitions, imported into this country at a very large expense. A single breeder of this variety told the writer that he had spent

more than fifteen hundred dollars in obtaining his stock, and he had not a very large stock of fowls. The best of these fowls were a deep, rich buff color throughout, the surface and the undercolor both being good. They were of large size, considerably heavier than American Leghorns. They had rather large, beefy-looking combs, which detracted somewhat from their beauty. They were also somewhat blockier in build than our Leghorns, which was a fault, or an excellence, according to one's point of view. Personally, the writer prefers the more sprightly and graceful figure of American Leghorns.

As a layer the Buff Leghorn is said to be fully equal to any variety of the breed. This is praise enough, for among great laying breeds the Leghorn stands in the front rank, having but few equals, and, perhaps, no superiors. The eggs of these larger Leghorns, the Buffs, are said to be larger than those of the other varieties. It is possible that this is so, for the increased size of the fowl would probably, though not necessarily, have a corresponding effect upon the size of the egg. If, then, it be true, as it is reported from the enthusiastic admirers of the variety, that the Buff Leghorn lays a larger egg than the other varieties, and as many in number as any one of them, its popularity will have a sound, economic basis. Upon such a basis an enduring and widespread popularity can rest, and only upon such. Fanciers in their pursuit of beauty, sometimes lose sight of this fact, but once let the utility of a breed be lost and the demand for it will be greatly diminished. Once upon a time, the White-faced Black Spanish was the standard by which all other breeds were measured. If a fowl was nearly as good as the Spanish —it could hardly expect to quite equal it—it was considered a very worthy breed. But the fanciers, in their attempts to increase the size and improve the texture of the face, in which attempts they succeeded remarkably, lost sight of its economic characteristics, and came near utterly ruining the breed, which, for years, was regarded, size and number of eggs being considered, the greatest laying breed in the whole list; and with this diminution of economic qualities came a very serious loss of popularity, and the fowl ceased to be in great demand. Although a return to economic qualities has begun, and is, to some extent, accomplished, yet the fowl has never regained its former position and prestige. The breeders of Buff Leghorns, however, seem to be acting more wisely, and one of their prominent claims for the popularity of the variety is that it is one of the best layers known. If they will preserve its economic qualities while improving its beauty, there seems to be no good reason why it should not become a desirable staple fowl.

A SAFETY FEED CHEST.

Those who have noted the numerous losses of valuable horses, cows and other animals, caused by gorging themselves at a meal chest carelessly left open, or have perhaps lost valuable animals themselves from the same cause, will appreciate a contrivance that will make such a disaster almost an impossibility. It may be urged that feed chests should be kept closed, and that animals should not have a chance to enter the barn floor, or the room where the feed is kept. But accidents will occur, and carelessness will sometimes appear, even in well-regulated stables, which makes important

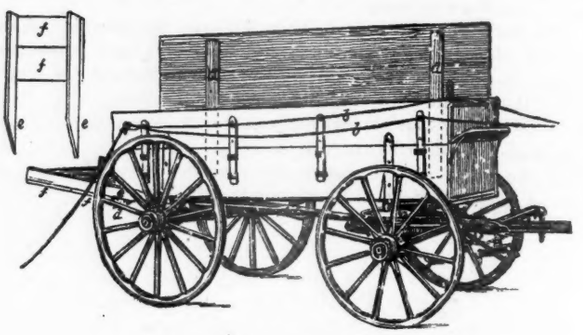


A SECURE FEED CHEST.

some device that will mechanically and automatically render accidents or carelessness impossible. The illustration shows a feed chest with numerous compartments, each cover hinged at the rear and arranged against the side of the wall so that it will not remain open except while held open. If, with the chest close to the wall, the covers still stand open, balanced upon their hinges, a narrow strip of board nailed to the wall above the chest will obviate the difficulty. Then each cover must be held open while feed is being removed—a condition that will keep the covers always closed. It happens, however, that some animals will raise such covers and help themselves. To guard against this, a spring catch at the side of each compartment holds each cover until released by the hand.

A USEFUL HUSKING WAGON.

In husking and gathering corn from standing stalks, the work is greatly facilitated by placing two boards on the far side of the wagon box, as shown by the dotted lines in the illustration, engraved from sketches by J. Whildin of Kansas. These are fastened together by four brackets, two on each side, two of which are shown at *a*, which pass down astride the far side of the box. This



IMPROVED HUSKING WAGON.

enables the husker to throw the ears of corn quickly without watching their passage. In this method of gathering corn, it is customary for the team to walk on the rows already husked, but just alongside the unhusked rows. As the husker advances, he calls to his horses to go on, which they do with unguided lines until spoken to; but they frequently do not stop promptly at the word, and if allowed the habit of disobeying they often get beyond his reach, when he is obliged to run to catch them, which leads to, and often causes, a runaway. This difficulty can be avoided by passing the lines, *b*, loosely through the loops at the tops of the standards and tying to them a long rope, to be trailed on the ground, a part of which is shown trailing. When the team gets too far beyond the driver, the rope is yet within easy reach, which he grasps and pulls, speaking to the team at the same time. A few lessons of this kind, promptly administered, make the team stop at the word. In unloading ear corn from a wagon, different methods are used to enable the operator to pass the scoop under the corn on the upper surface of the floor of the wagon bed. One of these devices is a wide scoop board, placed on the end gate and passing obliquely downward until it rests near the center of the floor of the wagon. In another method, the floor of the bed extends about twenty inches beyond the tail gate. In another, the tail gate is hinged at the bottom so that it opens downward until held by supporting chains on a level with the floor of the wagon box. All these devices are unhandy, having to be carried along and in position before the corn is loaded, and with the last method it is difficult to keep the box sufficiently tight to hold small grain, which is necessary where much of the grain is drawn to market, not in bags, but loose in the wagon bed. A superior device is shown in the illustration which represents a wagon with the seat and brake removed, showing how the scoop board, *e*, *f*, is made and applied. Select a two-by-four inch scantling, *e*, and bevel it eighteen inches back on one edge to a point on the opposite edge. Place it with beveled edge upward on the side of the rear end of the box, and on the projecting end of the cross bar, *d*, with the sharpened point resting under the projecting end of the bolster. Cut off the other end of the scantling two feet behind the wagon box. Bevel and cut from the remainder of the scantling a similar board and place it in the same manner on the other side of the wagon. Then with small nails fasten a wide board across the top of side pieces for a temporary stay. Now draw this frame out from the wagon, lay it upside down on the ground, and with three and one-half inch wire nails, firmly nail two boards, one by twelve inches, across the back end of the side pieces, as shown at *f*, *e*. Remove the temporary stayboard, saw the permanent ones, *f*, even with the outer edge of the scantling, and the scoop board is complete. To unload, place it in position, raise the end gate, stand on this platform and scoop away. If the end gate opens backward with hinges it may strike the platform before it is quite open. To remedy this obstruction, cut a little of the upper side of the end of the cross bar, *d*, or cut a notch in the bottom of the scantling, or both.

FUNGI INJURIOUS TO BULBS.

DR. B. D. HALSTED, NEW JERSEY EXPERIMENT STATION.

The lilies, which may by right take the lead among bulbous ornamental plants, have several leaf blights, among which are *Sphærella cinxia*, Sacc., *Phyllosticta liliicola* Sacc., *Cylindrosporium inconspicuum*, Wint., and *Cercosporella liliicola* (*R*), Sacc. But it is among the rusts that we have more conspicuous and sometimes destructive species of fungi. Thus, upon lilies there may be *Uromyces erythroni* (D. C.), Pass., with a wide range of hosts, from the crown imperial to the plebeian onion; *Uromyces lilii*, Clint., is a species found first on leaves of *Lilium candidum*, at Buffalo, N. Y., and might be called the American lily rust, to distinguish it from some of the others. Two species of cluster-cup fungi are recorded from the lilies, one *Æcidium Safianoffarum*, Thum., on the Martagon lily, in Siberia, and *Æcidium convallariæ*, Schm., which flourishes upon a wide list of the liliaceous groups of plants. While this is by no means the full list of the fungi attacking the lilies, it suffices to show that there are many enemies, possibly the worst of which is to be mentioned later. The hyacinth, in like manner, has several destructive fungi, among which are *Dictyuchus monosporus*, Seitg., closely related to the *Pythium*, which are among the worst enemies known upon the potting bench or in the greenhouse. *Rosellinia Massinkii*, Sacc., thrives upon the bulbs, while, perhaps, the worst of all is *Bacillus hyacinthi*, Wakk., Trev., which is known as the hyacinth disease, and will be considered later. The tulips have two species of the rust, namely *Puccinia tulipæ*, Schw., and *P. Prostii* Mong., both thriving upon the leaves. There is a smut, *Ustilago tulipæ* (*H.*), Wint., of the tulip, as the specific name indicates. Not the least destructive, particularly to the bulbs, is a gray mold, *Botrytis parasitica*, Cav., which is closely related to the *Botrytis* causing the trouble among lilies, known as the lily disease (Fig. 1). The narcissus has a rust preying upon it, namely, *Puccinia Schrœtheri*, Pass., that sometimes is quite destructive to the *Narcissus poeticus*. A rust upon the crocus is known to science as *Uromyces croci*, Pass., affecting the foliage in particular. The gladiolus has a rust *Urocystis gladioli* (*R*) Sm., upon its bulbs; a rust *Puccinia gladioli*, Cast., upon the leaves, and several blights; as, for example, *Sphærella fusca*, Pass., upon the foliage. Enough has been given to show that the bulbous ornamental plants are not exempt from the fungus troubles that other cultivated plants are heir to.

FIG. 1. LILY BOTRYTIS DISEASE.

Returning now to the lily disease, so called, we find it an old destructive enemy. It has been studied extensively by H. Marshall Ward, who gives it a whole chapter in his work upon "Diseases of Plants." The same subject was investigated by A. S. Kean, formerly a student in my laboratory, in Bermuda, where the growing of lilies is a leading industry, and the disease is a serious menace. His results were published with a large plate, in the *Botanical Gazette* for January, 1890. Professor Ward calls the lily disease one of the most annoying pests that the horticulturist has had to trouble him of late years. The trouble first shows itself as small rusty spots upon the buds and leaves, and by their enlarging the blossoms are ruined. The engraving (Fig. 1) shows the upper portion of a lily plant, with the four buds badly attacked by the botrytis fungus. This botrytis consists of coarse threads, which run in all directions through the attacked tissue, and finally appear upon the surface as upright branched stalks, bearing multitudes of spores. A magnified view of a section of the diseased tissue, with the spore-bearing branches of the fungus, is shown in Fig. 2. This form of mold is common upon many plants, and at times it is very destructive to root crops, as turnip and carrot. The onion, another bulbous plant, is often attacked by the same or a similar gray botrytis mold. The multitudes of spores borne upon the tips of the branches germinate quickly, and, when lying upon the surface of a lily leaf, will bore their tubes through the epidermis, as illustrated in Fig. 4. When once inside, the thread increases in size, and grows rapidly in length, branching and causing decay as it pushes along. After the botrytis fungus has grown for a while it may produce dark, hard bodies, by a peculiar twisting and knotting of its threads. These dark masses, or sclerotia, remain uninjured through the winter, and when spring comes they produce peculiar, trumpet-shaped outgrowths, as shown in Fig. 3, which finally gives rise to multitudes of spores. These are set free, and, finding their way to the young lily, produce the destructive gray mold again. These spores, by their large numbers and quick growth, show how it is possible for the lily disease to spread rapidly. The botrytis is fond of moisture, and in a dry season the lilies may generally escape; while, if the weather is damp, the destruction may be great. Mr. Kean suggests, as a remedy, "The planting of some other crop in alternate rows, which, with high and spreading foliage, will prevent the collection of the dew upon the leaves, and thus check the fungus, so dependent upon moisture for its propagation."

FIG. 2. BOTRYTIS FUNGUS, MAGNIFIED.

The hyacinth disease proper is ascribed to a microscopic organism, cylindrical in shape, and about four times as long as broad. Walker, who has studied this destructive disease extensively, named the germ *Bacterium hyacinthi*, and brief accounts of the species may be found in the leading works on bacteriology, as in Sternberg, under *Baccilus hyacinthi septicus*, Page 651. The germs are, in appearance, almost identical with those of many diseases of a contagious nature among animals and man. This is only one of many instances where a species of the higher plants is a victim to the ravages of one or more of the microscopic organisms, also vegetable in nature; the sorghum blight and the fire blight of pears being two other examples. The hyacinth bulbs that are affected with the above named bacterium, when cut through with a knife, show small pits filled with a yellow mucilage. It is in this slime that the micro-organism in question abounds. At the time of flowering, the diseased plants in the fields show yellow streaks in the leaves, prominent at the base, and disappearing toward the tip. In these yellow lines the bacteria swarm, in a slime which resembles that of the bulbs. It will be seen that little need be said in way of description of the hyacinth disease, and there is not much yet to write as to the treatment. A bulb that exhibits the yellow slime in cross section would, if set in the field, produce a diseased plant. The nature of the malady is such that the application of fungicides for sick plants, while not without hope, does not promise great things. Careful watching for the disease and rejecting affected bulbs are the chief remedial agents. There is a black rot of the hyacinth, also found upon narcissus and scilla bulbs, that is

FIG. 3. BOTRYTIS SCLEROTIUM.

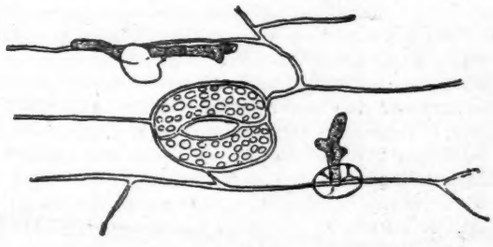


FIG. 4. BOTRYTIS SPORES ON LILY LEAF, MAGNIFIED.

probably a first cousin of the lily disease, if not the same thing. It has the hard, dark masses, or sclerotia, and the other structures mentioned with the lily botrytis, and is probably *Sclerotinia (Peziza) bulborum*, Wak. The gummosis, so called, of the hyacinth, also common to the tulip and ixia bulbs, has likewise been studied by Walker. The pure white-gum pockets are found mostly between the epidermis and tissue below, the starch being replaced with gum by a process of degeneration. These gum-bearing cells may increase abnormally in size. Walker concludes that this gummosis and the "white rot" of hyacinths are the same thing, and, having failed to produce the abnormal condition artificially by inoculation, affirms that there is no indication of the cause being due to a parasite of any kind. This last trouble seems, therefore, a purely physiological one, and there are many such among plants living under the pressure of high culture.

PROPER CARE OF HARNESS.

L. D. SNOOK, NEW YORK.

Some farmers pay little attention to the proper care of their harness, devoting less attention to it than liverymen, cab and hack drivers, who attend to this matter because it pays them well to do so. It is not a rare sight to see a farmer's heavy draught and single harness that have been used for several years without a drop of any lubricant touching them since they came from the dealer's hands. All the leather portion is hard and brittle and presents a dull appearance. If used during a shower, the parts that are rubbed look more like porous sole leather than an oak-tanned article. Such treatment shortens the life and usefulness of the harness at least one-half; whereas, a few cents' worth of oil and two or three hours' time each year would not only make the harness far more presentable, but add to its usefulness, and what is of greater importance, to its safety. Do not hang the harness in a horse stable. The ammonia arising from the urine is very destructive to leather of any kind. Before oiling the harness, remove all dirt and dandruff by thoroughly washing with strong castile soap suds. The harness should be taken apart before commencing operations. Choose a warm day, if done out of doors, or work near a stove if indoors. As soon as dry, any of the harness oils may be applied with a woolen cloth, or soft sponge, using care to saturate every portion. After each strap has been oiled, bend it back and forth, thereby introducing the oil to the very center of each strap. If not previously oiled for a long time, a second application should be given, and after a few hours go over with a dry cloth, removing all that has not been absorbed. In place of the usual neat's-foot or petroleum harness oil, melted lard free from salt, or even unsalted butter, may be used. It is better still to boil up the broken shin bones of a beef. The marrow, and what tallow there may be, will make a most valuable dressing of almost the consistency of oil, and may be bottled for future use. If a color be desired, add a little lampblack. This will prove equally efficacious as a dressing for boots and shoes. Fifty cents' worth of these shin bones, obtained of any butcher, will yield enough neat's-foot oil to last several years.

PAINT AND OIL AS PRESERVATIVES.

One of the best known and cheapest preparations for the preservation of both timber and metal exposed to the elements is linseed and other oils, alone, or combined with pigments to form paints. These not only keep the article in a more presentable condition, but add to their durability and consequent usefulness. Crude petroleum is cheap, and for exposed woodwork is the least costly preparation that can be used. Where durability, and not appearance, is the consideration aimed at, it should be freely used. It will be found valuable for fences, barns and other buildings. Upon old buildings that it is desired to paint, this crude oil will answer nicely as a priming coat, and at about one-sixth the cost of linseed oil. Being cheap, two coats can be applied, and these very heavily. If any of the cheap dry paints are mixed with it, a quite satisfactory color may be obtained at a small expense. Red mineral paint is very durable. Painting should be done in cool weather, not only because less material is required, the wood absorbing less oil, but flies are not troublesome then. When plentiful the flies destroy the effects of an otherwise satisfactory coat of paint. Generally, there is little or no profit in keeping shingle roofs painted, and as regards looks, unless they are painted every four years they become streaked and more unsightly than the usual unpainted roof. Here crude petroleum can take an important place, being applied with a whitewash brush very rapidly and evenly, and if the building is provided with eaves-troughs, the oil may be applied with a common sprinkling pot, all not absorbed finding its way into a vessel placed under the conductor. For ordinary work, an experienced painter is not needed. In mixing paint, be careful to keep it continually stirred, as the heavy coloring material settles rapidly to the bottom of the paint bucket. Paint the upper portions of the building first, to avoid the drops on the finished work.

A CHEMICAL WEED DESTROYER.

JOSEPH S. JAMES, U. S. DEPARTMENT OF AGRICULTURE.

In making some experiments with various preparations for the prevention of wheat rust in Kansas, E. Bartholomew has found one which, while useless as a preventive of rust, might, perhaps, be of value as a weed destroyer. The preparation was ferrous ferrocyanide. It was observed that while weeds appeared after harvest on most of the experimental plots in greater or less abundance, on those where this mixture was used none were found. The mixture was composed of about six ounces of iron sulphate, or copperas, and twelve ounces of potassium ferrocyanide. Copperas solution alone has been used to kill dodder. These two chemicals were dissolved in a small quantity of water, and then diluted with five gallons of water. The preparation is, perhaps, worthy of a trial in localities where the Canada thistle and other pests are common. It might be sprayed upon them early in the season with an ordinary knapsack sprayer. It should be remembered, however, that it would probably destroy useful and useless plants alike, and great care should be exercised on this account.

LETTUCE CULTURE IN THE SOUTH.

SAMUEL A. COOK, GEORGIA.

When the best varieties are used for planting, and the crop is grown on rich land, and crisp white heads are ready for the table very early in the spring, a crop of lettuce represents altogether a different thing from that resulting from the use of inferior kinds that make a straggling growth to maturity on poor soil, and come in for use late in the season when other vegetables come in competition with it, and the taste for lettuce begins to wane. To make lettuce growing profitable and satisfactory, it must be made to produce large, crisp heads, ready for use very early in the season. The market gardener sows the seed in the cold frames in October, and secures large, well-rooted plants ready to be set out early in January, in this latitude. Further south, of course, they are planted out in November and December, and frequently, even in middle Georgia, the limited plantings that are risked in December are not injured by the slight cold of the Southern winter.

Where pine straw, or other mulching material, is readily obtained, it is quite easy to protect the plants by giving a light mulching whenever severe weather is threatening. When one cultivates the crop with the expectation of realizing two to three cents per head, perhaps five, he is justified in giving all necessary care towards making an early crop a perfect success. Grown to the state of perfection that it is possible to attain with the true Boston Market and the Improved White Cos, where a good strain of seed is used, the lettuce crop is one of the most profitable to local market gardeners that can be grown in the vicinity of the cities or large towns. Not that it is desirable to devote too large an area to its culture, but to share proportionately with the others according to the market for which they are grown and the demand for this class of vegetables. A tenth of an acre, made very rich, can be made to grow 2,100 heads of White Cos, and twice that number of Boston Markets. This allows for the rows being two feet apart and plants twelve inches in the rows. Magnificent heads can be grown at this distance if the soil is made as rich as it should be, and large, well-rooted plants set out early in January or earlier, and kept steadily growing by frequent cultivation with rake or shuffle hoe. The latest planting of lettuce is made in Middle Georgia in March or April, but there is little money in this late crop, and the attempt to make it is not to be recommended to market gardeners.

Extra Feed with Short Pasture.—As soon as the pastures become short, or dried up, supplement the food of the cows with corn fodder, or green feed of some kind, which has been grown for the purpose. Perhaps there is nothing better than corn drilled very thickly, letting every tooth run as for grain. Let it be as near the barn as possible for convenience in handling, and feed generously in the mangers night and morning. Rye or wheat pasture is good.

VEAL AND PORK IN NORMANDY.

H. ERICUS, FRANCE.

Meat is the most urgent necessity of the French people. The dairy must furnish veal. Every calf that is not needed for the dairy is fed and fattened up to two, three or four months, for veal, while in America milk-fed calves are vealed at from five to six weeks, and sell at from $5 to $8 per head; in France they bring from $15 to $30. The calves are fed milk, and finished off the last week with eggs beaten up in the milk. The veal calf must have the white of the eye of a white color to bring the best price. Such calves produce delicate flesh-colored meat with white fat.

England can justly boast of her hams and bacon, but for sweet, tender, lean pork the Normandy pigs have no equal in the world. They are fed largely on meat-producing food, as milk, peas, barley, rye and wheat bran. They are not fed on corn meal alone. They are slaughtered at about six months. The bristles are burned off by laying the carcass on straw and setting it on fire. Though the carcasses come out black, they are scraped white and clean, and dressed perfectly while warm. It is believed that pigs thus dressed keep better, and that the meat is sweeter.

As a rule in France generally, and in Normandy in particular, but little attention is paid to breeding swine. The large, white English half-breed swine are deemed the best mothers, and are bred up to six years. The Berkshires are not liked so well on account of color. But from the large majority of pigs being pure white mixed with black, proves that both these English breeds have been extensively used for crossing. This is shown in the finer bones, smaller heads and shorter snouts of the Normandy pigs especially. [The engraving, from a photograph, represents a fully half-bred English white sow and her Normandy pigs.]

HALF-BRED ENGLISH SOW AND HER LITTER OF NORMANDY PIGS.

INDIGESTION IN LAMBS.

HENRY STEWART.

One of the most frequent disorders of the domestic animals, and it may be truthfully added of their owners as well, is indigestion. But while this disease is a typical one as regards its peculiar symptoms and development, yet it is due to so many causes as often to mislead the observer, and even the expert, by reason of its reflex action on the nervous system. Thus the symptoms differ so much, and commonly appear to be due to other and unsuspected causes. Indigestion leads to malnutrition, as well as to special disorders of the stomach and bowels, and the immediate result of malnutrition is disturbance of the nervous functions. Thus we have cases of paralysis, partial or general, as in the paraplegia of pigs, lambs and sheep, in which the hind limbs are suddenly paralyzed and the animal crawls on its side or belly by means of its forelegs only, or the fore part of the body may be affected and the animals go about on their knees, or stagger and fall, unable to rise for some time, when they stand a few minutes and go down again. Necessarily, this disease is fatal, as motion is prevented, and the food being undigested, it is only a question of time when the patient dies of starvation, and yet the real cause is not suspected. The young lambs, which become suddenly weak, go off their food, pine away, are affected by obstinate diarrhœa, or prolonged costiveness, cough and breathe with evident distress (the result of the disorder on the pneumo-gastric nerve) and become emaciated. It is true that sometimes these same symptoms are caused by the presence of kzots of thread worms in the lungs, and the obstacle to perfect respiration having a similar result on the system as defective nutrition, the same condition of the animals will prevail, or the worms may gather in the stomach and have precisely the same effect as the indigestion produced otherwise. And these worms may even cause such a depraved appetite as to induce animals to swallow earth, chew wood, or to cause lambs and sheep to swallow wool, all or any one of these gathering as balls or wads in the stomach or intestines, and giving rise to the most acute symptoms of indigestion, with its nervous reactions. Thus lambs at this season may be troubled by worms, the common filaria especially, which is supposed to be the cause of anæmia or paper skin, and is very often so, but at times is apt to be only a proximate cause of this condition, as leading the lambs, or even old sheep, to pull and swallow wool. This forms what are known as wool balls in sheep, or hair balls in calves, or sanding in horses, mules and cattle.

The only remedy is prevention. Sometimes the lambs or calves may gather wool or hair from the udders of their dams, and at the season of the shedding of the hair this often happens. The effect of this accidental disturbing agent in the stomach is to produce an unnatural desire for more of this foreign matter, and then the lambs or sheep begin to pull wool and swallow it, and when this collects in the stomach or large intestines the troubles described supervene. When there is this danger, and there always is, the udders should be closely clipped; vermin, as lice or fleas or ticks

should be got rid of, so that the animals will not collect wool or hair by licking or biting themselves; and on the first appearance of this the best means that are obtainable are to be applied as a corrective. The best substance to remove the foreign irritative matter is oil, raw linseed, or olive, or castor, in doses of half an ounce for a young lamb, given in milk and shaken into an emulsion.

AMERICAN BROOM CORN.

F. G. HAWKINSON, KANSAS.

The growing of broom corn in the United States for the manufacture of brooms and brushes, was commenced almost a century ago, and has been continually carried on in different localities. Brooms and brushes are now a household necessity, and they are used by every family, on every boat, in every warehouse, hall and stable in the United States, and in many countries of Europe. The productions have been steadily increasing until the annual product is now estimated to be about 32,000 tons, valued at $2,500,000. The United States has practically a monopoly of the production of broom corn, as no other countries have, as yet, produced it either in such quantity or quality as would entitle them to be recognized competitors in this line of industry. Broom corn is a non-saccharine variety of *Sorghum vulgare*, which is a native of India. It was introduced into this country by Dr. Benjamin Franklin. He is said to have accidentally seen an imported whisk of brush in the possession of a lady in Philadelphia, and while he examined it as a curiosity he discovered a seed, which he took off and planted, and from this small beginning has sprung up the present quite extensive broom corn industry of the United States. It was afterward raised by the Shakers at Watervliet, N. Y., in their gardens about the year 1791. In 1798 it began to excite attention, and brooms were made from it. Its production was carried on for some time in the Mohawk valley, N. Y., and later at Circleville, Ohio. Between 1860 and 1870 the Swedes begun to raise it quite extensively in the northwestern part of Illinois, where much is still raised. About twenty-five years ago it began to be produced in central Illinois, mainly in Coles, Douglas and surrounding counties, where it is now raised very extensively, principally by Americans. In 1870, the writer, together with some others, commenced the growing of broom corn in central Kansas, which at that time was almost a wilderness and by many called a barren desert. This, I believe, was the first attempt to raise it as a field crop for export purposes in this State. By this trial it was plainly demonstrated that Kansas soil and climate are particularly suitable for the production of broom corn in large quantities, and its cultivation has steadily increased since, and at the present time it is raised in nearly every county in the State, in fields of from one acre up to 1,000, with McPherson, Reno, Rice, Stafford, Sherman and Cheyenne counties in the lead. It is considered that nearly one-half of the entire product of broom corn is raised in Kansas. Considerable is raised in Nebraska and Tennessee, and some in the States of Missouri, Iowa, Arkansas, Texas, Louisiana, Oklahoma and California, but the bulk of it is raised in Kansas and Illinois, with Kansas always ahead as far as quantity is concerned, and sometimes for quality also.

A sandy loam soil has proved to be the best for broom corn. It produces heavier yields and better quality than the heavy, black soil. New land produces finer fiber than old, and can be best depended upon to grow a crop. It is claimed by some that, owing to the fact that the stalks are often burnt up, and that thus everything is taken away from the land and nothing returned, that broom corn will impoverish the soil more than any other crop. This, however, has proved to be a mistake. I know of several instances where as many as ten successive crops of broom corn have been taken from the same piece of land, and the last crop has been fully as good as the first when the season was equally suitable. But the stalks were not burned up every year; they were plowed under occasionally. If the stalks, which average about ten feet in length after the brush is cut off, are plowed under every third or fourth year, the soil will always retain its productiveness. It makes the ground too loose to plow under the stalks every year, and if there is a dry spell in the early part of the summer, the soil will get as loose and dry as ashes, and the crop will suffer. Besides, the stalks harbor insects, especially chinch-bugs, which have always been great destroyers of broom corn, when the plant is in its earliest stages.

If broom corn is free from chinch-bugs, and is kept clear of weeds, and is well cultivated, so that the ground is mellow on top, it will withstand severe spells of drouth, and is, therefore, peculiarly adapted to dry climates. But with this crop, as with all others, it is advantagous to change from one crop to another. In my long experience of over a quarter of a century as a broom corn grower, I have found that wheat stubble plowed immediately after the wheat is taken off and planted to broom corn the following spring, has always produced the heaviest yields and the best quality. I have also found that after three or four successive crops of broom corn have been taken from a piece of land, the stalks can be cut up, raked in windrows and burned, and then winter wheat drilled in without plowing or harrowing, and it will produce more wheat to the acre and of a better quality than if wheat or any other crop had been raised on the land before. Broom corn can also be successfully raised after Indian corn, and Indian corn after broom corn, and both benefited. Fertilizers have not been needed here. As no American ingenuity has yet been able to invent any machine that will successfully cut broom corn, the harvesting has to be done by hand, and requires a great deal of labor; and as the ordinary farmer is not prepared to keep a large force of hands at one time, and often cannot get them, even if he could take care of them, he has to do his planting in the spring in the same order that he expects to be able to take it off in the fall. This will also save shed or drying room, and scraping and other machinery. Many farmers who raise from forty to sixty acres each year, club together and help one another to harvest. Planting is commenced about the first of May, and can be done up to the latter part of June. There has been some planted as late as the 10th of July that has made a good crop, but planting so late is taking considerable risk, as one night's frost in September would destroy the crop, which is then useful only for the brush, and is almost a total financial loss.

Fig. 1. GRAMMA GRASS.

Importance of Thoroughly Cleaned Seed.—It takes but a little while longer to run the seed grain through the fanning-mill a second time, and those who have not tried it will be surprised at the amount of foul stuff and light grain that will be cleaned out. The light grain and small kernels are far better for feeding purposes than for sowing with the expectation that they will give as great an increase as the kernel that is plump and well matured. A safe rule to go by in cleaning seed grain is to use a little coarser screen, that all the small kernels may be taken out, and run the mill at a little higher speed than usual that all light and false kernels may be blown out. Of course none of this refuse grain is lost, but may be used for feeding chickens or other animals. Guard particularly against sowing weed seed of any kind. Better go twenty miles after pure, clean seed than sow seed contaminated with foul stuff.

VALUE OF THE PRAIRIE GRASSES.

D. E. FULLER, KANSAS.

When we take into consideration the fact that there are about ten billion acres of prairie grasses in the United States, their vast importance and value to the farmer, stock grower and dairyman, and great value is apparent. Not only this but the material wealth and prosperity of the whole nation has been greatly enhanced by their creative powers, necessitating the building of railroads to carry the cattle, horses and sheep, and the meats, and materially assisting to build important cities. Without their products the condition of things would not have demanded the building of that great stock center and marvel of the nineteenth century, Chicago, with her immense stock yards, dressed meat plants, warehouses, commission houses, and a thousand other enterprises growing out of, directly or indirectly, these great stock interests. Three-fourths of all the cattle, horses and sheep are fed upon prairie grass. The most valuable of all the prairie grasses is the blue joint,

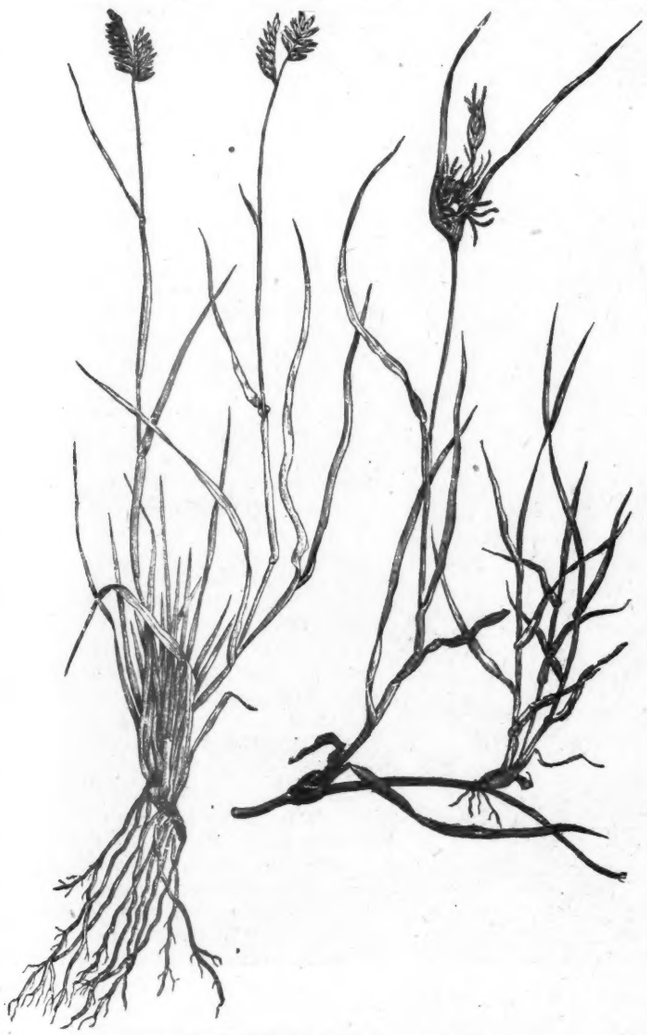


FIG. 2. PRAIRIE BUFFALO GRASS.

Andropogan furcatus, which has usually only a few seed stems two to four feet high, leaves flat when green, growing from one to two feet high in a solid mat on all good, rich soil, and in tufts on thin land. It grows luxuriantly in all prairie States east of the one hundredth meridian, covering, before any was plowed, a territory, in round numbers, of six hundred million acres. Blue joint is indigenous to all fertile prairie lands that have an annual precipitation of twenty inches or more, and afford excellent pasture from April to October. Many stock growers and dairymen regard it superior in fattening and milk producing qualities to any other grass in the world during the months of May, June and July. After that month it loses somewhat of its nutritious quality, and becomes utterly worthless when affected by a few frosts. Millions of tons of hay are made from this grass annually, and it is the principal rough feed in winter in many States, and is shipped to the principal cities of the Union, being much used by horsemen, as it is almost entirely free from dust when properly cured and housed. In Kansas alone there are about three million tons cut each season, worth at least twelve million dollars to that State.

The wild prairie grasses are fast running out. Close grazing, heavy tramping and late mowing soon destroy them and weeds take their place to a great extent west of the ninety-eighth meridian; east of this point the annual rainfall is sufficient to grow tame grasses successfully, but west of that they are almost a total failure. Blue joint kept pace with the white settlers west of the Missouri. When I came to Kansas, in 1868, and settled near the one hundredth meridian, there was scarcely any blue joint west of us, only here and there a patch in the bottom lands. But by the next spring half of the buffalo grass was gone and blue joint had taken its place, forming a thick, firm sod, and a luxuriant growth taking possession of the broad acres, but it was a welcome visitor, and wealth followed in its train. In digging wells I have seen where its small roots penetrate the earth for six feet. Dry weather never kills it,

FIG. 3. PRAIRIE BLUE JOINT GRASS.

but retards its growth, and if it continues sufficiently long the sun burns the end of the leaves; when this is the case, no amount of rain will make it grow until it is eaten off or mowed, when it will start up as thrifty as in early spring. By judicious care it will flourish for years. It has many peculiarities; manuring does it no good, while topdressing tame grasses helps them very materially the first year. Another striking feature it possesses, to a remarkable degree, is the wonderful growth it will make under favorable circumstances. Where the Elkhorn in Nebraska empties into the Platte, it forms a delta of several hundred acres. The soil is of such a nature that subirrigation is so complete that even the surface is kept moist all of the time. Here this grass attains a growth of ten feet, but in the depressions where water stands a portion of the time, though it be only at a depth of an inch or two, not a spear of blue stem grows, but a rank growth of slough grass appears, frequently not more than a foot or two wide, but extending for quite

a long distance, the blue stem being much the taller, although usually the slough grass makes the much ranker growth; all of which only proves the illimitable productiveness of this vast area when placed under a proper system of drainage and irrigation.

West of the 102nd meridian, blue stem is seldom seen, excepting near some water course, or in patches around some spring; west of this flourish the mesquite grass, *Bouteloua oligostachya*, and the buffalo grass, *Buchloe dactyloides*, in all their pristine beauty. Prior to 1870, millions of buffaloes, countless herds of deer, antelope, and elk wintered on the plains, foothills and canons of the Rocky mountains, subsisting on these grasses and keeping fat all winter. The mesquite has round spikelets one foot high with two rows of flattened rhachis well loaded with oily seed, very fattening, with a mass of fine, flat leaves at the base of each tuft. The frost simply cures it on the ground and it retains all of its nutritious qualities all winter. Butchers kill fat beeves from this grass every month in the year. In the Sixties all of the freighting from the Missouri river was done with ox wagons to the mountains. The long hauls reduced the teams to very thin flesh during the freighting season. When winter set in the stock was turned out on the range, and by spring they would make very fair beef.

The buffalo grass formerly covered the undulating plains from the mountains to the Missouri river. It has a creeping stem, with rootlets covered thickly with fine, short, velvety leaves soft as moss. The ponderous tread of the bison only seemed to make it more thrifty and vigorous, and it followed them to their last slaughter on the plains of Colorado, Wyoming and Nevada, where it still survives, although the last of these vast herds of noble animals has passed away, as victims to man's wanton and savage cruelty. Cattle, horses and sheep graze on their old stamping ground. Man's cupidity has not even left a bone to mark where they met annihilation to tell the tale of their former existence, all being picked up to be carted to the nearest railroad, shipped and manufactured into fertilizer. These grasses thrive where it is too dry for blue stem to grow, so there is no danger of it running them out, consequently they are destined to be much longer lived, but they are too short for hay, and in a few years prairie hay will be out of the market. [The engravings on the preceding pages show in Fig 1 a plant of the Gramma grass, in Fig. 2 one of the Prairie Buffalo grass, and in Fig. 3 one of the Prairie Blue Joint grass.]

THE PEASANT FARMERS OF RUSSIA.

FRANK G. CARPENTER.

Russia is the largest farming country on the globe. It contains more than one-seventh of all the land upon the earth's surface, and more than four-fifths of its vast population are tillers of the soil. It is, in its natural resources, the richest country in the world, and it will, in the future, be the greatest competitor of America in the grain markets of Europe. The empire is so vast that its people do not know what they have. Only eighteen per cent. of its area is now cultivated. Millions upon millions of square miles of it are made up of soil which is as rich as guano, and which has never been touched by the plow. There are wheat lands in Siberia which rival, in their fertility and size, the wheat areas of the United States, and the Black Plain of Russia contains thousands of acres of land as rich as that of the Red River of the North or of the fertile valley of the Nile. Much of the Black Plain is cultivated, and four-fifths of European Russia is more or less managed by land owners. This makes an area of about half the size of the United States, but only a small part of this is well farmed, and a vast amount of Russia still belongs to the czar and the nobles. The czar owns more than half the lands of the Empire, and he has more forests than would cover the State of Ohio. There are more than a million nobles in Russia and 100,000 of these are land owners. The peasant farmers own about 300,000,000 acres, and the average amount owned by each peasant is less than thirteen acres. The peasant farmers, however, to a large extent cultivate the lands of the czar and the nobles, and peasant farming is practically the condition of Russia to-day, these small farmers being heavily taxed by the czar.

RUSSIAN PEASANTS AND FARM WAGONS.

I have traveled for thousands of miles through the farming lands of North, Central and South Russia, and I find that the secret of Russia's poverty lies in her poor farming. The people who are starving have been standing in the midst of the greatest granary the world has ever known. In the very worst of the famine districts I found farms which, by deep plowing and good cultivation, had brought forth an abundant harvest in the midst of the drouth, and a proper cultivation of the Black Plain alone would, it is fair to say, give Russia all she could eat and drive our grain out of the markets of Europe. If Russia's grain fields were cultivated in the same manner as are those of Great Britain, it is estimated that she would produce, every year, enough grain to feed 500,000,000 people, or nearly one-half of the whole population of the globe. Russia has a little more than 100,000,000 people, and this would throw on the markets of the world food for 400,000,000 more. Russia has immense wheat areas in Asia, and the Vladikavas railroad runs through about 5,000 miles of the richest of soils. Between the Caucasus and the Black Sea, in the district of Stavropol, there are at least 1,500,000 acres

RUSSIAN FARM.

of the finest wheat lands which produce now only about 12,000,000 bushels of wheat a year, but which could produce 120,000,000 bushels. Only ten per cent. of this land is now cultivated, and this is by wooden plows and in the rudest of ways. Even as it is, however, Russia has, in the past, sometimes surpassed the United States in the export of wheat; and in 1888 she sold to Europe about 1,000,000 more tons. Her rye exports have been feeding Europe for years. She sells more rye and oats than any other country, and she had, up to the time of the famine, been increasing her exports year after year. She has done this with the poorest of farming and under the worst agricultural system that exists among the so-called civilized countries of the world to-day. What will she not do when capital and labor are organized in her boundaries as they are in other countries of Europe, and when her vast unknown wilds are turned into fertile farms? The famine has turned the attention of the world to the condition of Russian farming, and the government of the czar has decided that a change must be made. The more advanced of the people are studying agricultural questions, our system of crop reports has lately been adopted by the government, and I met many land owners who told me they intended to visit the World's Columbian Exposition, and that it was their purpose to introduce good American farming methods upon their Russian estates. Already quite an import trade has sprung up in our agricultural machinery, and I found American plows, reapers and threshing machines on some of the great estates of the Black Plain.

To change Russia will be the work of generations rather than years, and it is necessary to look into the condition of the people in order to understand the possibilities of the country. The Russians are a nation of farmers. In their vast empire there are only a few great cities, and the bulk of the people live in farm villages. There are, it is estimated, more than 500,000 of these villages scattered all

RUSSIAN MOWERS.

SOWING GRAIN IN RUSSIA.

over Russia, and these villages constitute the only dwellings of the farmers. No one lives in a house alone upon the field. One sees no fences and no barns in looking over the landscape, and a greater part of agricultural Russia consists of a vast plain, upon which one can travel for hundreds of miles and not see a tree, and which, running from the Baltic to the Black Sea, does not contain a single great mountain. There is in all European Russia scarcely a hill that is more than a thousand feet high, and the only relief the eye meets upon the plains of Central and South Russia are these collections of thatched huts, which stand out upon the vast patchwork of yellow, green and brown. One of these villages at a distance looks more like two lines of low haystacks straggling a mile or so along a wide road than like an American town. The huts are of the rudest description, are seldom more than one story high, and they are always covered with a thick thatch of straw. There is little difference in the houses, and the home of the peasant farmer in Russia which has cost more than fifty dollars to build, is the exception rather than the rule. The houses stand alone, and are never put up in blocks. There are no fences about them and no gardens behind them. You see no flowers blooming about the door-steps, and the people know nothing of modern improvements in the way of light or water-works. The average hut is about twenty feet square, and it has little windows

at the front and a rude door. It contains two rooms and a loft, and its floors are of board or the earth itself. One of the rooms is always larger than the other, and the smaller room acts as a sort of a vestibule to the larger one. Into it the door enters, and here the peasant keeps his tools and other things of little value to him. The larger room is the cooking, eating, sleeping and living room of the family, and its furniture consists of a stool, a table, a rude bench under the windows, and an oven-like stove. The family is generally large and a dozen people may live in one room, and it is not uncommon to find three or four families living in one of these huts. They all sit down or stand about the rude table at meals and scoop their food out of the common wooden soup bowl with wooden spoons, using no forks nor plates. At night they huddle as best they can, men, women and children, all packed in together, on the top of the ledge over the stove, which takes up about one-fourth of the room, and they sleep here more like swine than men. It is not uncommon to have a pet lamb, a dog or so and some chickens living in the hut with the family, and a more rude or squalid condition of life cannot be imagined.

The ordinary Russian farmer seldom has a suit of clothes which costs more than five dollars; and both men and women wear the costumes of their sex which have been in vogue in Russia for generations. The farmer's wife never has a new style of bonnet, and her headgear consists of a bright-colored handkerchief which she ties about under her neck. Her ordinary dress is a long gown which reaches from the neck to the feet, with an apron tied about over the bust and around the waist; and both sexes wear for stockings, rags about the feet, wound around and around from the toes to the top of the calves, and tied on with strings. They wear in the summer shoes of bark, which are low and heelless, and in the winter the poorest of them, both men and women, wear long, clumsy boots made of thick felt. In the summer, neither sex wear underclothes, and none of the members of the family of a Russian farmer take off their clothes at night, nor do they use bed clothing. Their winter dress is largely made of sheepskin with the wool turned inward, and the men wear long overcoats of sheepskin which they make themselves. The Russian farmer's wife of the peasant class has little trouble in cooking meals for the family, and such a thing as a cook book is unknown to her. If she can boil potatoes, make cabbage soup and bake rye bread, she is considered a good Russian housewife. She never has to think of pies or puddings, and the dishes of the family are so few that a patent dish-washing machine has never entered her head. Her husband looks upon her more as a worker in the field than as a worker in the house, and the field life of the Russian farmer and his family is far different from ours.

In America every farmer has his own establishment, small or large, and he plants his crops and pays his taxes without asking questions of anyone. In Russia everything is done in communities or "Mirs," and the villages, as a whole, own the land. The whole country is divided up on a communal system, and Russia presents the strange anomaly of being the most autocratic and at the same time the most democratic country in the world. Each of these villages is a little community which decides everything by popular vote. Each village is taxed so much by the czar, and the land is apportioned out among its members by the householders of the village in a village assembly with regard to the labor the families can perform and the amount that is required to support them. In the first place the village land is divided up into three parts, or three great fields, to provide for the rotation of crops, as is customary in Russia. One strip is supposed to lie fallow for a year and not be used at all. Another is used for the planting of summer grain, and the third is used for the planting of winter grain. Next year the fallow land will be used for the winter grain and the land which is planted with this crop will raise summer grain, while the summer grain land will lie fallow. Each of these three divisions is divided up into long strips, one of which goes to each family of the village, and the strips are large or small according to the number of workers in the family, and not according as to whether they are men or women. According to the amount of land each family has it pays a proportionate amount of the government tax, and what it can raise over this is its own property. The methods of labor, however, and the times of labor are fixed by the farmers of the village council. The people do their work together, and at harvest time the subordinate officers of the village, one representing a certain number of families, will select the mowers, and these mowers will be expected to be on hand with their scythes at two o'clock in the morning, and by three A. M. they will be moving over the fields as one man. There may be fifty of them, and each ten have a head scythe-man. They will rapidly mow the fields, and by eight o'clock in the morning the grain may be all cut. Now gangs of women and young people, who have been organized in the same way, come over to the fields and rake and bind the grain. They all work together, and they accomplish a great deal by their systematic labor. The planting is done in the same way, and I have yet to see a single man or woman, except a shepherd or a herdsman, working alone in a Russian field. The girls sing at their work, and the peasants of Russia, if they can get only enough to eat, are happy.

The division of land among the people is not made at fixed periods, and it ranges in time from every three to every fifteen years. Where the time is short, the peasant has no incentive to improve the land allotted to him, and this is one reason for the poor farming in Russia. The people will not fertilize and develop their fields when they may be given at the next division to their shiftless neighbors, and the result is there is no spirit of progress in Russian farming. The tools used by the farmers are of the rudest description. The soil of many parts of Russia is so rich that when it is tickled with the wooden plow it will laugh at the harvest, and the Russian plow is the same as that is found in old Mexico and in the valley of the Nile. The harrow is often a piece of brush-wood, and the reaping machine is the scythe with a long and perfectly straight handle. A great deal of grain is cut with the sickle and the thrashing is almost all done with the flail. The harness of the horses is of the rudest description, and nearly everything is tied together rather than buckled. The farm wagons have boat-shaped beds, which are hung without springs on a rude frame-work, and, the wheels are heavy and revolve upon wooden axles. The tugs of the harness are often hitched directly to the axles, and every harness has a great yoke which comes in the shape of a bow over the neck of the horse and which forms the most striking feature of the Russian turnout. To this yoke the bridle-rein is fastened, and the bigger the wagon the bigger the yoke and the more gaudy its paintings.

The well-to-do farmers have little barns back of their houses, joined to them in the shape of an L, and it was a curious thing to me that the people generally carried their hay home from the fields and dried it in front of their barns. There are no large barns for the stowing away of straw and hay, and in traveling for thousands of miles over the Black Plain I saw only one grain elevator. The czar has lately set aside ten million dollars for the purpose of building elevators, and of doing other things which will improve the condition of the farmer, but at present the farmer has to raise his grain, thresh it as he can, and sell it for the price which the foreign merchants offer for it. The grain is taken directly to the cars, and it is bought without regard to grade, a fixed price being given for poor and good alike. This, to a large extent, removes the incentive to good farming, and the lack of transportation often makes the peasant sell his crop for little or nothing. The grain is almost altogether sown by hand, and I have not seen a steam plow or a gang plow in Russia. It is a curious thing that all the raking and binding of the grain is done by women, and these Russian peasant girls are wonderfully strong and hearty. Children are put to work in the fields as soon as they are old enough to do anything, and there are no idle people in a Russian farm village. The matter of taxation is such that the heads of the village insist on every woman working and paying her share of the taxes, and in some places people get more land than they want, and have to farm it. [Our illustrations, engraved from photographs, show on the preceding pages various scenes in the life of the peasants of Russia.]

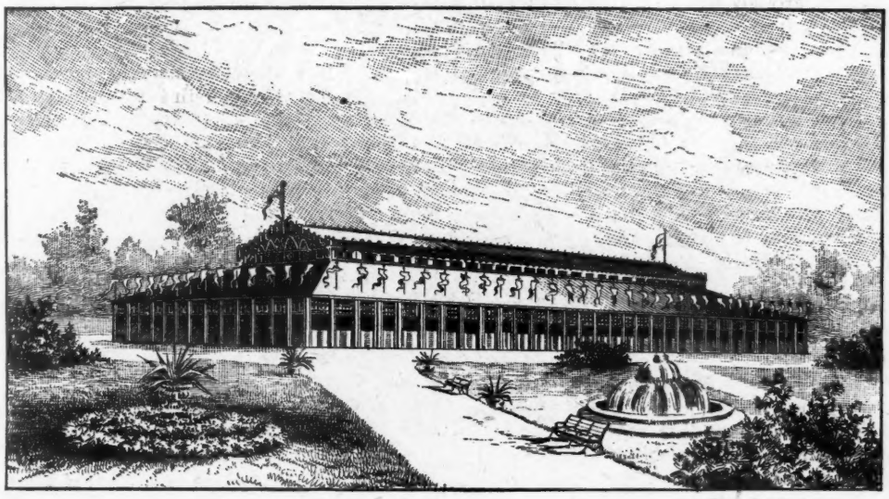
Fall Feeding of Young Stock. — Young farm stock, whether intended for the slaughter or to be retained upon the farm, should be kept growing continually until nearly, if not fully, the average size is attained. Keep the animals in good pasture during the summer and during the usual drouths of early autumn. If an extra growth of corn fodder to be used as a daily feed is not attainable, then a feed of grain should be given at least once a day. During the cold, stormy days that prevail before stock finally go into winter quarters, the grain feed should be maintained, and when brought to the yard warm, comfortable shelter be provided. Do not practice the foolish policy of attempting to see how cheaply one can winter stock, that there may be more grain and hay to sell in the spring. On the contrary, give them the best of fodder, if there be a choice. This need not necessarily be dealt out in large quantities, but in amounts that will be eaten up cleanly previous to the next feeding. A quart of ground feed fed daily to a calf or colt, or a small handful to each lamb, will greatly stimulate growth and prove a good financial investment for the stock-raiser.

FORESTRY AT THE COLUMBIAN EXHIBITION.

JAMES K. REEVE.

A visit to the Forestry building, and a study of the things that it contains, will help many people to a new appreciation of the full importance of the Forestry interests. This is a vast object lesson, showing what Forestry comprises, the uses to which Forestry products are put, and the advanced methods of Forestry practice. The building itself well illustrates the subject, as it seems to have come almost rough hewn from the forest. Constructed wholly of wood, it is in strong contrast to the other buildings in the Park. And everything in and about it, from the great tree trunks that make the magnificent outer colonnade, to the most minute and polished tablet that adorns the interior, is designed to show the economic value of our forests.

Forestry products embrace a wide range. Here, for instance, we have in one group cork, charcoal and wood alcohol. These do not seem to have much direct relation to trees and logs of wood, but they are just as logically entitled to be in this exhibit. The cork display shows us that this material, which, as every one knows, is the bark of the cork tree, has other uses than the mere stopping of bottles. Here are cork bath mats and life preservers, both objects of utility, and ornaments and carvings of cork; a Chinese Pagoda, a reproduction of the Capitol at Washington, and other curious things. The exhibit of a celebrated manufacturer of veneers shows the jewelry of Forestry. Here are curious knots and burls of wood, brought from many lands; rough, unsightly stumps, whose value runs into high figures. Shaved down into the thickness of paper, the grain brought out by the most careful polishing, and then used to cover inferior woods, these knots are made to reach an ultimate value that perhaps is not attained by wood in any other form. In contrast to these veneers, and close beside them, is a mammoth redwood plank, cut from one of the famous "big trees" of California. This is sixteen feet five inches by twelve feet nine inches, and five inches thick. Perhaps a better idea of the size of this plank may be had when one considers that it would make the floor for a good-sized room.



FORESTRY BUILDING, COLUMBIAN EXPOSITION.

The opposite of this huge plank is seen in the display of French wood mosaics. Ornamental floors, wainscoting, table tops, and decorative woodwork of every description are made by the combination of minute particles of various woods into smooth and polished tablets. Rugs and hammocks, and even a display of paper, show the uses to which wood fiber may be put. The Japanese bamboo exhibit is curious, and makes us rather envy the simplicity of their methods of furnishing their homes. Allied somewhat to the bamboo display is the handsome array of basket work, a branch of our timber industry that is being rapidly extended. But the building is so full of curious things that it is impossible even to mention them. The woods that are not manufactured and the parts that serve to illustrate the science of Forestry are better worth studying. German Forestry is illustrated by both models and engravings, which show the methods of planting and the care of natural forests. Our own Forestry bureau shows sections of trees, sawn in various ways so as to display the grain. With these examples are photographs from nature, showing the tree both in summer foliage and winter nakedness. Then there is a brief, plainly printed description of the wood, and the uses to which it is adapted, and a map showing the region wherein the tree may be found. All this gives a quite accurate knowledge of each of our native trees. A large room, finished in highly polished panels of native woods, gives an opportunity for studying what are best adapted to interior finish, and a study of these will show that there are many more than ordinary people have knowledge of. Many of the States make special displays of their timber riches and resources, and it may be worth noticing that Ohio, although pretty well denuded of its forests, has a collection embracing eighty-four sorts. Among the many States which deserve mention in this respect are also Michigan and West Virginia. Among the foreign countries, Brazil, as might be expected from the immensity and value of her forests, makes one of the most elaborate displays. Here are mainly the dark and heavy woods that are of especial value in cabinet work. The exhibit of New South Wales shows immensity of growth and variety and value; from some of the photographs of big trees, we see that she may fairly rival famous California in this particular. Wood-working machinery and the outfit for sawmills and lumber camps, and shingles and lumber in the rough, suggest the life that the hardy choppers and lumbermen lead in the forest, and help to a realization of what the lumber industry is, from beginning to end. Take it as a whole, the Forestry building is a most comprehensive illustration of a too-much neglected industry. Its mission is to teach that the growing of a tree is as much a part of the work of the true agriculturist as is the growing of any other plant.

FLOWERING BULBS FOR THE HOUSE AND LAWN.

PROF. L. R. TAFT, MICHIGAN AGRICULTURAL COLLEGE.

Considering the small expense of time and money required to obtain by their use the means of brightening the home with flowers throughout the winter, or of securing beds of bright and showy flowers upon the lawn during the early spring months, it is strange that so little attention is given our more common bulbs. While others are desirable, the Dutch bulbs, including the hyacinth, tulip, narcissus and crocus, are especially worthy of cultivation. Although several species of hyacinths are grown, none are better adapted for house use than the one commonly known as the Dutch hyacinth. It is easily grown, stays a long time in flower, is quite fragrant, and its white and various shades of red, blue and yellow flowers render it a valuable bulb for the house. For early flowering, the smaller white and blue Roman hyacinths are used, especially by the florist. If desired, they can be grown in boxes, but pots are preferable for the house. Single bulbs are placed in four or five inch pots, or a pleasing cluster of three or four may be flowered in pots that are seven or eight inches in diameter.

Bulbs of all kinds prefer a rather open, friable soil, and a good potting compost can be prepared by mixing two parts of well-rotted sods, one part decomposed cow manure, and one part sharp sand. In case rotton sods cannot be obtained, good garden soil may be used instead, especially if a supply of fine leaf mold can be secured to mix with it. The bulbs should be inserted in the soil about three-fourths of their depth, in such a way that when the soil has been carefully pressed about them, it will be about three-fourths of an inch below the edge of the pot. When large pots are used it is well to place a layer of excelsior, or sphagnum, or of pieces of broken pots in the bottom to aid in securing good drainage.

The soil should now be thoroughly moistened and the pots put away in some cool place, where they can be covered with moist sand or coal ashes. They may be kept in a corner of a cellar, or in almost any place where a regular amount of moisture can be secured, and where they can be kept cool and yet at a temperature above the freezing point. Thus treated, the bulbs will, in five or six weeks, throw out roots and fill the pots before the leaves or flower stalks start. When this period is at hand, they should be

taken out and placed in a warm room. Good results will be obtained if kept for a few days at fifty degrees, and then placed where they will have a regular night temperature of fifty-five to sixty degrees. The plants at this period should be carefully watered, avoiding both saturation and dryness. When the flowers open, they will remain fresh longer if they are kept in a cool room.

By saving a portion of the bulbs to be potted at intervals of three or four weeks, a continuous succession of bloom can be secured throughout the winter. Nearly the same result can be obtained by keeping the bulbs at a low temperature, and bringing them into a warm room as needed. Most bulbs are of little value for forcing a second year, but they may be used for planting out if desired. The other bulbs mentioned require about the same care, but they can be grown closer, as five or six tulips can be placed in a six-inch pot. If a well drained moderately light soil can be provided, there will be but little chance of failure with bulbs in the open ground. After taking up the summer bedding plants, in October, the soil should receive a dressing of rich, light compost, and after being thoroughly dug over it will be ready for the bulbs. The distance and depth of planting will depend somewhat upon the size of the bulbs used, and, as a general rule, they should be placed at a depth equal to three times their diameter, and at a distance of six or eight diameters. Having made holes of the proper depth, the bulbs should be inserted right side up, and the soil replaced and pressed firmly about them. No other care is required until December, when it is best to cover the beds with a light mulch of litter, or strong manure, to keep the ground from freezing and thawing during the winter. While this is not necessary, better results will be obtained if it is done. As soon as the frost is out of the ground in the spring, the bulbs will start and the mulch should be removed and the surface of the beds raked over lightly, to break up and smooth the caked surface.

Fig. 1. ONE-YEAR-OLD FLAT PEA PLANT.

While the best effect can be produced if the bulbs in a bed are of one kind and color, very good results can be obtained by planting in ribbon lines, or if the colors are mixed. From the fact that they flower at different times, it is not the best plan to combine such bulbs as hyacinths and tulips in one bed; some of the smaller ones, however, such as snowdrops, crocus and *Scilla sibirica*, can be used, if desired, as ornamental borders for the other bulbs. The single tulips are the best for bedding, and some sorts, such as the scarlet Duc van Thol, are sold at a quite low price. The parrot tulips also are very showy and will give satisfaction. The Dutch hyacinths, either single or double, are also excellent for bedding. As soon as the bulbs are through flowering and the beds are needed for other plants, the stems may be cut off just under the surface of the soil, or they may be taken up and dried off to be planted out in the fall. If the bulbs are left in the ground, the beds should only be used for such small plants as can be put out without disturbing the bulbs, and which can be readily pulled up or cut off below the ground, after being killed by frost. Many kinds of the more vigorous bulbs, particularly those that have been forced in the house, can be used to advantage under groups of shrubs and evergreens, when their bright flowers will contrast pleasantly in the spring. Under favorable conditions, bulbs bedded in the ground will give very satisfactory blooms for several years, although the trusses each season become smaller. In localities where moles and mice are troublesome, it will be best to place the bulbs singly in small flower pots about the first of January, and treat the same as if to be used for forcing in the house. As soon as the ground can be worked, they should be planted out. Having thus been established, they seemed to be but little disturbed, although in instances where all the bulbs have been planted out at once many have been destroyed. Early single tulips do well for the house, and are easily grown. Three bulbs should be put in a five-inch pot. The tulip is not at all particular as regards soil. A light loamy or sandy soil can be kept in better condition than a heavy one, and in such there will be a more rapid growth. In preparing a bed for tulips, care should be taken to have it so shaped that it will shed water, which is a greater injury to the bulbs than frost. The soil should be worked deep and made rich. It would be better to plant the bulbs in September. If the soil be heavy, put the bulbs three inches below the surface; if light, put them four inches below, and six inches apart each way. If protected, as they should be, rake off the covering as soon as vegetation starts, as the tulip is one of the first plants to appear. It will well repay the cost to throw a straw mat over the bed whenever there is danger of freezing, to protect the buds, and remove the mat during the day whenever the weather is mild enough to permit.

LATHYRUS SILVESTRIS OR FLAT PEA.

O. CLUTE, DIRECTOR MICHIGAN EXPERIMENT STATION.

The plants of the Flat Pea in the Michigan station experiment field went through the severe cold of last winter without injury. Not a plant was killed, although the mercury went down to twenty degrees below zero Fahrenheit. In some slight depressions in the field ice formed over the plants, and as spring came on I found that the crowns of these plants were killed. But in every case the killing seemed to extend down only about an inch, and the roots sent out from the live part sprouts which grew luxuriantly. By March 31st the shoots were well started. In some parts of the field, where there had been a good covering of snow, and the lower sprouts had been further protected by a mass of sprouts above them, I found these lower sprouts of last fall's growth still green when the snow disappeared. From the last of March until the middle of May, we had much cold weather, and all vegetation started slowly, but by May 20th the plants of Flat Pea nearly covered the ground with a fresh, crisp mass of forage, having much the taste of ordinary pea-pods. The field received no cultivation last spring. It would have been easy, of course, to have run the cultivator between the rows early in the spring, but, as the ground was loose by the action of frosts, this was not necessary. It was not necessary to cultivate to keep the weeds down, for the plant itself started so vigorously, and soon covered the ground so completely, that nothing else had any chance. The two-year-old plants were in rows fifteen inches apart, and the plants were four inches apart in the row. The one-year-old plants were in rows thirty inches apart, and as thick in the row as they grew the previous year, generally much closer than four inches apart, so that there were fully as many plants to a square rod on this part of the field as on the older part. But as the rows were twice as far apart, the growth did not cover the ground quite as early in the season as did that of the two-year-old plants. Through June there was good weather, with enough rain. The Flat Pea grew with great luxuriance. It covered the ground with a dense, tangled growth. At present, July 20th, the plant has crowded itself into billows of verdure. It stands fully three feet high, but if it were possible to disentangle a single shoot from the mass, it would be much longer than three feet; probably not less than six feet. It began blooming about July 1st, and kept sending out blooms in profusion, until now there is a great quantity of flowers and partly-grown pods. On the tenth of July one square rod of the two-year-old plant was cut, which yielded at the rate of sixteen and eight-tenths tons of green forage per acre. This was carefully cured, and gave at the rate of four tons of cured hay per acre. The hay is very bright in color, and has a most agreeable odor. Cattle in the stalls and horses eat it with avidity. The half-tone engraving (Fig. 2), made from a photograph, shows in a degree how the plant appears, but no picture can give a good idea of its luxuriant vigor, nor of the mass of forage with which the ground is covered to a depth of more than three feet. This luxuriant growth, combined with the habit of the pea family to send out numerous tendrils that twine around everything that they reach, threatens to be a serious obstacle in making hay from the plant. The sprouts are so intertwined that they cover the whole surface as with a felted garment. A team of horses can walk through the field with difficulty. If a mower were put in at the edge to cut the forage, having gone once across, the cut portion would be closely joined to the adjacent uncut part by the numerous intertwining sprouts and tendrils. It is difficult to mow it with a scythe, for the cut part will not roll over into a swath, but hangs attached to the uncut part. Some kind of a cutter will have to be attached to the mower, which will sever the mown strip from the adjacent part. Of course this trouble would not appear if the fields were pastured.

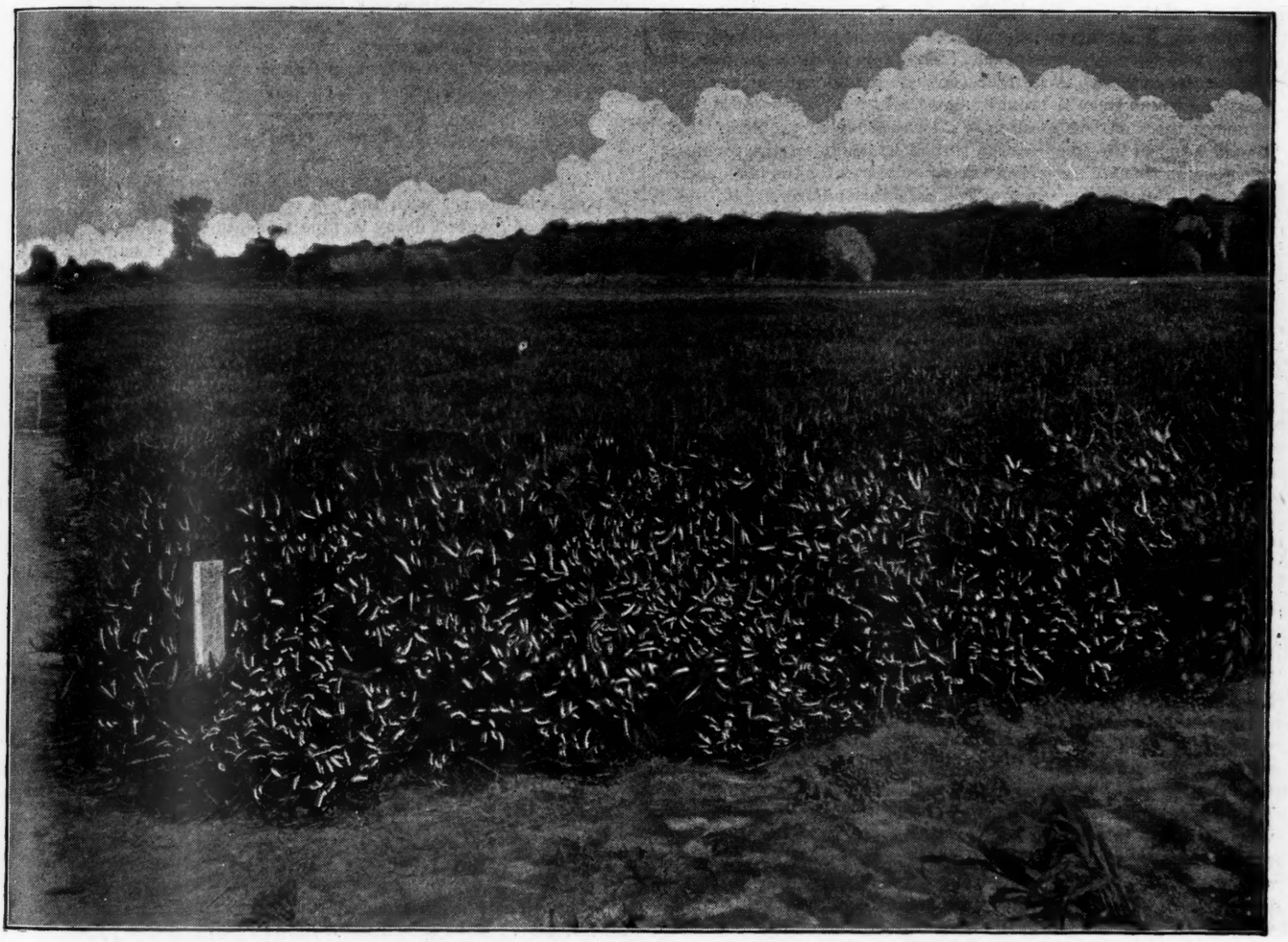


Fig. 2. FIELD OF FLAT PEAS AT THE MICHIGAN EXPERIMENT STATION.

The root development is remarkable. The photo-engraving (Fig. 1) shows a one-year-old plant with root, dug on June 26th. The ends of all the roots, as may be easily seen from the cut, were broken. If it had been possible to secure the finer extremities of

the roots, they would have shown a wonderful and beautiful network. The number of nitrogen-secreting tubercles is very great. The tubercles are larger and much more numerous than on any other plant I have seen. As one sees them on the freshly-dug root, they are astonishing. In digging a plant that has such long and delicate shoots, the top necessarily becomes more or less injured; hence the top, as shown, does not give a good idea of the beauty of the plant. But one can see an indication of an important characteristic of the plant in the very numerous sprouts which grow from each crown. Twenty, thirty, even forty sprouts from each plant are by no means uncommon with this promising forage legume.

AGRICULTURAL LABOR IN THE SOUTH.

O. W. BLACKNALL, NORTH CAROLINA.

Southern farmers, along with all other Southern men and women, too, have had many new problems of life to solve in the past twenty-five years. The conditions under which they labored were so novel and strange, such a sense of uncertainty hung over all, that much advancement could not be expected, the farmers, as a class, being conservative people. They rely more on the past, on custom, than others. And, therefore, great and sudden changes, like those which the war brought about, affected them most keenly. Of course the knottiest question of all was the labor problem. How can the labor of the freedman be turned to profit on the farm? is the question that we have been asking ourselves for the last quarter century, without so far reaching a satisfactory answer.

Three different methods have been tried in succession, each change, though apparently necessary, if not imperative, having harmed instead of helped matters. The first was the share system. The plantation owners having no money to hire hands, arranged with their former slaves, or such as sought homes on their farms to cultivate the land, using the landowners' horses and tools, and receiving in payment one-half of the crop raised. A few landlords took first one-fourth the crop for rent, dividing the remaining three-fourths with the laborer. But this measure, considered unfair from the first, was soon dropped. Very many faults were found with the share system. "Cropping on his own hook," at first so enticing to the negro, proved a snare and a delusion. Rain, drouth, crab grass or something else was almost sure to stand between him and a good crop, while the landlord complained that the negro was so careless or cruel with the work animals that he often killed a horse, and sometimes even two or three, in making one crop.

About the close of the Sixties, by mutual consent, the share system was changed to the hireling system. Ten dollars a month and board was the standard price. If the laborer had a family, a house, garden, and as much firewood as he saw fit to cut, was given him. Day laborers received sixty to seventy-five cents with board. Roughly speaking, this system may be said to have extended through the Seventies. As it gave the landowner full and complete control of his lands and brought back something like the old relation between the races, it was far more agreeable to him than the former system. Great efforts were made to maintain it. By all sorts of reasoning and calculations the farmer tried to convince himself, in spite of plain results, that the system was the proper one. Wages were cut down from $120 a year to $100, and afterwards to $75; and from seventy-five cents per day to as low as forty cents. But debt and mortgage grew apace, and this system was, by the great body of farmers, necessarily given up.

The employee system was succeeded by the tenant system. The negroes were allowed to build log cabins to live in, and to use as much firewood and take in as much land for gardens and potato patches as they chose, free of charge. Land was rented them for one-fourth of the crop. When necessary, and it was pretty apt to be necessary, the landlord either advanced supplies himself to his tenant while the crop was making, or stood his security, so that he might buy from the neighboring merchant. In view of the fact that the unreliability and irresponsibility of this multitude of petty tenants, and to simplify matters and lessen cost and trouble all around, laws were passed in this State, as in most others at the South, to control such matters. A claim for supplies advanced by the landlord took precedence of all others, even though they might be mortgages previously registered. It was also made a misdemeanor to remove the least portion of the crop from the premises until all rents were paid. But as there was no penalty for eating the last grain of corn, provided it was done on the premises, this law did not always save the landlord, and another plan was tried. The tenant system has called into being a class of dealers known as "time men." These time men advance meat, meal and fertilizers to the tenants, after having an understanding with the landlord that he will, himself, advance nothing and bring no claim against the crop, other than the rent charges. These "time accounts," although secured by mortgage on the tenant's crop, steer or work animal, and such other belongings of all kinds as he may chance to be possessed of, are such risky claims that even with a profit of fifty per cent. most of the dealers have failed. For, combined with the danger of the tenant's shipping the crop off secretly in driblets, is the still greater one that he may become tired or discouraged, and after eating the supplies go off to work for wages, leaving the crop in the grass and the "time man" in the lurch. An inevitable result of this vagrant tenant system has been a rapid deterioration of a great part of the agricultural lands of the South. That ruin, total and complete, has not ensued, is owing solely to the very great advantages of soil and climate, which man, be he ever so shiftless, cannot entirely neutralize. A hopeful sign is that our farmers are now aroused to the evils of this system and of their methods in general, and efforts are being made, and greater will be made, to remedy them. Tenants are being taught and encouraged, and there is a growing tendency to intensive farming with hired labor. Some intelligent, active men are already making fortunes, even with the present low prices of farm products.

FENCE POSTS.

In actual practice there is but little difference in the durability of posts whether set with the top or bottom end in the ground. The point of greatest decay is, nine times in ten, about six inches above and below the surface of the ground. This is caused by the continuous changes from moisture to dryness, while the part which is far below the surface is not subject to changes, but is nearly always water-soaked, which with many woods acts as a preservative. If any preservative is applied to a post, it should be at the point where it will be near the surface of the ground both above and below, or, if they are charred, it should be at the point named. In setting posts where the lower end is below the action of frost, the big end should be downward, as then the frost will not have such a leverage in raising it upward. A projecting knot left near the lowest portion set in the ground will have the same effect, or a notch cut in the side of post near the bottom, in which a flat stone is placed. A hole bored and a wooden pin inserted and left projecting a few inches will have the same effect, the point being to have a weight of earth above the projecting surface, and yet below the usual frost line. It is a mistake to set posts eight to ten inches in diameter, thinking they will outlast those of a smaller size; for general use, a fence post six inches in diameter is more durable than one of nine inches in diameter, and containing one-half the material, it takes longer to make the larger excavations. The larger ones are heavier to handle, and if purchased cost far more, with no corresponding benefits to be derived. As to durability, cedar stands at the head of the list, with oak as second choice.

WINTER STORAGE OF POTATOES.

F. B. VAN ORMAN, IOWA.

Where merely temporary storage for potatoes through one winter is wanted, a pit dug about three feet deep, four to six feet wide, and as long as is necessary to store the crop, will be found satisfactory. Make a ventilator for every fifteen feet in length of pit, by using a one-by-six inch fence board sixteen feet long, sawn in two pieces, one nine feet and the other seven feet long. Rip the seven-foot piece lengthwise, making strips three-by-one inch. Place these strips even at the top end and nail together. This leaves an air space of three by four inches, and the narrow strips coming only to within two feet of the bottom end, give a circulation of air all through the tubers; set these up in the pit before putting in any potatoes, resting the bottom end on the ground, so as to take all damp air from the bottom. Fill the pit to within six or eight inches of the top at sides and ends, rounding it up in the middle to one to two feet above the surface of the ground (Fig. 1). Cover with at least two feet of good dry straw, wheat or rye preferred, using care to have straw well tucked in at sides and ends of pit, so that as the covering freezes and separates from side of pit, there will be no air space made. If care is used in covering and the pit not dug too deep, or filled too near the top at the edges, I have always found the tubers coming out sound in the spring; but where pits of this kind have been made too deep, I have sometimes found a loss on top from the warm vapor from the bottom rising and

freezing in the straw above, to thaw out in a warm spell and overheat the potatoes. There will be no need at any time of closing the ventilator, as the damp air going out will freeze in cold weather,

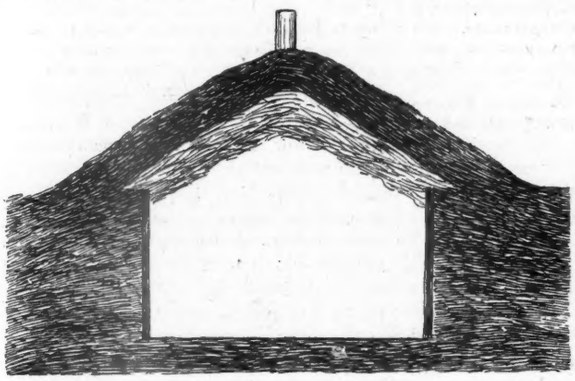


FIG. 1. CROSS-SECTION OF POTATO PIT.

on meeting the surface air, and in very cold weather close up the top, thawing out as soon as the weather moderates.

Where large crops of potatoes, or other root crops, are regularly grown, a permanent pit or cellar will be found not only the most satisfactory, but the cheapest. If possible, select a high, dry place to locate the pit, or else make it so by drainage. Excavate the pit by using a plow and road scraper, finishing up with a spade. I prefer a pit eight to ten feet wide, and at least eight feet deep. It may be wider if many varieties are grown, so as to allow an alleyway along one side. Build it as long as is necessary to hold the crop. Dig a space at one end eight feet long and six feet wide for a hatchway, with steps or ladders. Draw a line through center of pit lengthwise, and dig post holes one and one-half feet deep and large enough to take in a good post of cedar, or other durable wood, eight inches in diameter and twelve feet long. Set these firmly in the holes and tamp well (Fig. 2). Square and level the tops of these, which will extend three feet above the top of pit. Place the

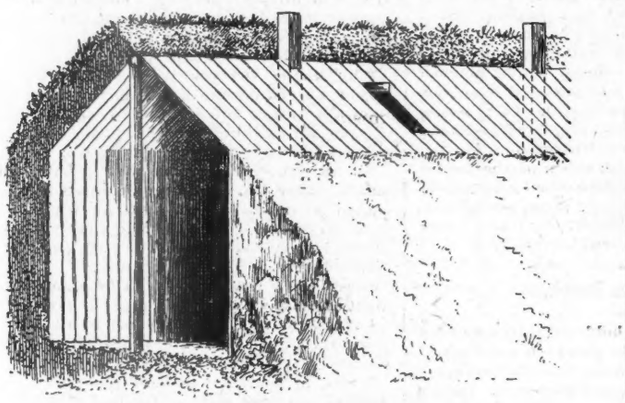


FIG. 2. PERMANENT POTATO CELLAR.

ridgepole, nailing roof boards on planks at side of pit. Make frames two by six, and three feet in depth, with cleats inside for bottom cover. Use a tight-fitting cover for both top and bottom. The top cover should extend over the edges one-half inch. Place the frames not over fifteen feet apart on one side of top, for the convenient filling of the pit. Make ventilators four by six inches inside measure, and long enough to extend two feet above surface of covering and one foot below ridgepole, and spike in place on one side of same. Now make another long enough to reach the bottom of pit and large enough to slip up over the one just described, but be sure to have the first four feet of the bottom quite full of two-inch auger holes, or else do not extend side boards to within one foot of bottom. On top of roof place cornstalks, sorghum bagasse, or other coarse material. On top of all spread two feet of soil. Wherever possible, sow the soil on top of pit with clover, to prevent washing. Make a hatchway with tight-fitting, inside and outside ridgepole a strong timber eight by ten inches, and as long as the pit. Spike this to top of the long posts.

Choose two two-by-twelve inch planks, and lay them on the ground, one on each side of pit, at least six inches from the inside edge of pit, using fence posts sawed one-half round, cedar being the best. Lay them two to three inches apart, resting the top ends on doors. Such a pit, if dug in good, dry soil, and if good material has been used, will last for years. If the soil on the sides should not be sufficiently strong to stand, the walls must be boarded. If too wet, cement must be used. I find that a pit constructed in this manner keeps the tubers firmer, and longer without sprouting, than where a solid plank, or stone top, is used. Much of the moisture enters the soil from above. The dirt roof lasts much longer than the plank top or a board roof would.

A PLAN FOR A CORN HOUSE.

The accompanying illustrations from sketches by C. E. Benton, of Massachusetts, show a novel and useful plan for a corn house, by which not only is more corn sheltered in proportion to the size and expense of the building, but what is of vastly more importance, the corn is saved from the damaging effects of driving rain and snow, which in moist climates so seriously affect the value of the crop in the old-fashioned cribs, while it is waiting to be ground or fed. The ordinary crib has slatted sides, and the ventilation is horizontal, hence the driving rain and snow finds easy access to every ear of corn. But by this method the ventilation, while even more perfect, is from the bottom upwards, which entirely protects the corn from direct exposure to the elements. The building, which may be of any convenient size or proportion, is placed upon chestnut or oak posts two feet high, which are at proper intervals and are firmly set in the ground. A building of suitable size for a small farm is

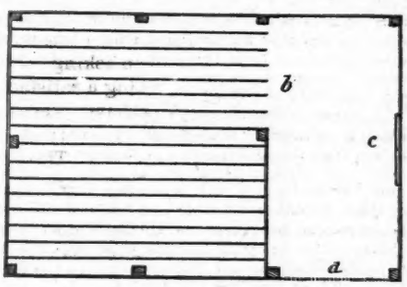


FIG. 1. FLOOR PLAN OF CORN HOUSE.

eight by twelve feet, and six feet from sill to plate. A partition, as shown in Fig. 1, leaves an alleyway four by eight feet at one end, with an outside door, *a*, as well as a doorway, *b*, which gives access to the crib. For convenience there should also be a window at *c*.

This makes a convenient place in which a corn sheller may be stored and used, and in which, also, the bags may be filled when a grist is being put up for the mill. The arrangement leaves a crib eight feet square for the corn, and as it could be filled considerably above the plates, it would store about four hundred bushels of ears, or sufficient to make two hundred bushels shelled. The botton of the crib is floored with narrow boards, leaving a space of three-fourths of an inch between the boards, thus making a slat bottom to the crib instead of slat sides. The sides should be boarded tight like any other building. To secure perfect ventilation, rough doors are hung from the sills of the building, against the posts on which it rests, and care is taken while the corn is curing to keep all these ventilating doors closed, except on the side towards the wind. Thus a current of air will be continually forced up through the corn, and escape through the ventilator in the roof. Fig. 2 shows

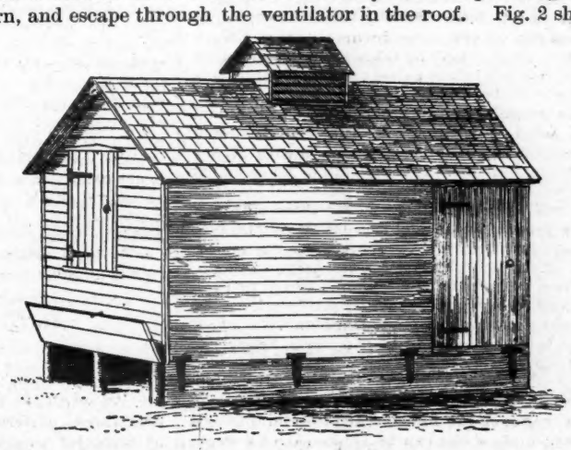


FIG. 2. PERSPECTIVE VIEW OF CORN HOUSE.

the ventilation door open at the end of the building and held up by a hook. An upper door is provided through which to fill the crib, and if it is desired to fill it to the very roof, this may be accomplished by carrying the last few bushels up a stepladder in the alleyway.

HOUSEHOLD

Change as a Medicine.

D. WEBB.

A great many people know in a general way that a "change" is often beneficial to those who are suffering from certain maladies. If it were more generally recognized that the bodily benefit comes very largely through the invigoration of the mind by new scenes and surroundings, there would be a greater use made of this very sensible kind of medicine, which indeed is not necessarily expensive, for a trip to Europe is not the only way by which a "change" can be secured. In fact it can frequently be found within a few miles or a few rods even, of one's own home,—a change, moreover, that will be devoid of the discomforts and fatigues of travel, which in no small number of cases destroys all the good effects that would otherwise come from the new scenes and experiences. Many persons who are victims of dyspepsia, have been surprised to find that when eating with some merry company they have not only eaten more heartily than usual, but have actually arisen from the table feeling no distress whatever. Some who have felt spiritless and "out of sorts," and even really sick, will remember that on some of these occasions all their bad feelings have disappeared as by magic on the advent of some cheery caller, or by the offering of an opportunity to make some pleasant little excursion away from home. These familiar illustrations may serve to show what wonderful influence the mind has in controlling bodily feelings and functions, and may also serve to emphasize the fact that a proper amount of change and variety in life is necessary to keep the mind in a healthy condition. Variety is not only the "spice of life," but a remedial agent in acting beneficially upon the body through the mind. A little forethought will provide diversions and needed breaks in a monotonous life. It may be that one needs to make an effort to be more socially inclined, to go among people more, to more frequently entertain pleasant acquaintances, and to be entertained by them, to make little excursions or picnics to pleasant places in the surrounding country,—in brief, to vary what might otherwise be monotony by such pleasant breaks in one's every-day existence as can readily be commanded by almost every one.

Suggestions For The Nursery.

PALMETTA MONTCLAIR.

There are many families who cannot keep a regular nursery, but even among such there is usually one room inhabited by baby to the exclusion of most of the others; a room where he is at liberty to crawl about, where he takes his nap and makes the most of his infant existence. If possible, this room should be the sunniest and best ventilated in the house. His ability to withstand croup, colds and the like ills incident to childhood, will depend largely upon living in a room with plenty of sun and pure air. There should be no draughts from beneath doors and windows to chill his little body. If there are cracks, cover them with listing, or if beneath the door there is one too large to be cobbled in this way, make some long, narrow bags of stout muslin, not unlike large sausages, fill them with sand and keep one in front of each doorway. They may be covered with dark canton flannel or cretonne with a dark ground.

If it is not possible to have a warm, heavy rug over the carpet, lay plenty of old newspapers under it. However, where there is a creeping baby a wood floor with a rug extending to within a few inches of the base-board is preferable to a carpet. Such a rug can be shaken once a week, and if you will stamp your foot on a carpet that has been down six months and see the microbe-laden dust that arises, you will understand how deadly it is to a child's lungs. Dark green shades —a pretty olive green—are best at the windows. A room can be made almost perfectly dark when baby takes his nap, and when it is necessary to soften the glare of sunlight this color is most admirable.

No matter how simple it may be, baby should have his own furniture; a low rocking chair, a little straight-backed chair and a low table. It is injurious for children to sit with their feet dangling several inches from the floor, to say nothing of the discomfort. The table may be only the simplest sewing table costing a dollar, that can be folded up when not in use; if the legs are too long, saw them off.

Wild Wood Beauties.

ALICE CHITTENDEN.

Lovers of Nature cannot afford to let her autumn spoils go all untouched. At least one excursion should be made after autumn leaves, or, better still, encourage the children to bring home the most perfect specimens they can find every day on their walks to and from school. They will keep quite well between the leaves of the school books, or between folded newspapers, for a few hours.

To preserve these, cover a board with four or five layers of newspapers and tack smoothly over all a soft cotton cloth. It will be well to keep a special board, which need not be a large one, for ironing the leaves. Have a piece of beeswax tied in a cloth and some resin likewise tied up. Take up a leaf, smoothing it out on the board; rub the beeswax lightly over the hot iron and pass the iron quickly over the upper and then the under side of the leaf; repeat this three times, each time pressing a little more firmly and slowly. If this is done carefully, the colors will never fade. When all the leaves have been treated in this way, rub a moderately hot iron lightly over the bag of resin and go over both sides of each leaf once. This gives a glossy finish, which, although it is somewhat unnatural, is still preferable to the coating of dust they otherwise soon acquire. Small branches can be preserved if the twigs are pressed in the same way. When all are done, lay them in a cool, darkened room between newspapers, but without weights, for a few days.

Let your selections be as varied as possible. With the amber of the larch and chestnut leaves mingle the vivid crimson of the sumach. This latter is always difficult to gather, as the leaves drop so easily from the stems, but if plucked before they are too dry, and attended to at once you will generally be successful. Oak leaves have duller colors, but they are shiny and keep well, and make an artistic background for the silvery white speckled with green of the poplar and aspen; the gorgeous crimson and gold tints of the hard maple give richness of color, and there is much beauty in a trailing blackberry vine with its dull chocolate and mottled red leaves.

A Kitchen Porch.

A great many farmers hold the mistaken idea that it is not necessary to go to the expense of building a platform and cover over the entrance to the kitchen or back room of the house. During rainy or stormy weather the men folks in particular are more than liable to rush into the house without properly removing the dirt from their boots, because they do not care to stand in the rain and wipe them on a mat or bit of carpet already soaked with water. If a platform, and even a cheap cover, is provided, the women folks will be saved much unnecessary floor cleaning. A cheap lattice work of wood or wire, or even twine, will allow vines to cover the porch, making a nice shade. All this costs but a few dollars, and is never regretted. If the platform is large, nearly level and well shaded, it will be utilized by the housekeeper for many purposes.

For The Dining Table.

Dresden patterns for embroidery on linen to be used on the dining table are just now very popular. They consist of very tiny floral sprays, not over three-quarters of an inch in length, dotted at irregular intervals over a white or cream surface. A tiny forget-me-not with a scrap of a leaf and a bit of stem, a rosebud, or small cornflower, a violet, or bit of heliotrope, worked always in their natural colors, are the designs most frequently used, and two or three of these designs are usually combined on one piece of embroidery or painting. They are arranged as if dropped carelessly from the hand, and the effect is very neat and pretty. The center of the dining-table should be made attractive in some way. A bowl of fresh roses, buttercups, apple-blossoms or daisies is always a pretty sight, and if renewed frequently, is perhaps the most desirable ornament for this purpose. A piece requiring less frequent attention is made by placing in an antiquated berry or butter dish, or some other not ungraceful receptacle, a clump of hepaticas, anemones, violets, ferns, or the single, crimson and white petunias which bloom without urging and can be relied on for a long time. A cluster of wood-flowers taken with their own soil, is as pretty a sight as one could desire, and Nature understands how best to arrange them. A center-piece of flowers has a refining effect on the family table. Flowers are never untidy, and even a rough man of uncouth habits may get some refining influence from a bunch of bright flowers placed near his plate.

Hints For Those Who Build.

E. R. FLINT.

Too many country houses are built without apparent regard for the convenience or comfort of their future inmates. Few have any provision for warming the upper rooms, unless possibly the "front room" may have a stove in which to light a fire when there are guests to spend the night. Instead of such insufficient heating accommodation, the chambers might be comfortably warmed by means of registers through the floors, with simply the surplus heat from the lower rooms.

It may be healthy to sleep in a cold room, but it is not very pleasant to make a toilet in a room when the thermometer hovers around zero.

These registers may be put in after the house is built, by any one handy with tools; each eight inches by ten, costing about a dollar and a half. There should be a clothes closet opening out of each sleeping room besides an extra large one, in which to keep bedding or clothing out of season.

I find there are many houses, too, that are built with rooms of inconvenient size for carpeting. Where at all possible, rooms should be an even number of yards floor measure one way, so that it will not be necessary to turn under part of a breadth of carpet or to leave a bare space.

Why cannot the country house have a bath room? Surely no one needs such a room more than the farmer and his family, yet the conveniences for bathing are conspicuous by their absence in nearly every country house.

Fit up some small room with a bath tub of metal, either tin, zinc, or galvanized iron, connected with the cistern by a force pump, the water to be warmed with a small single or double burner kerosene stove, and the bath water to be emptied through the kitchen drain.

Surely some means could be provided without great expense whereby that great luxury a warm all-over bath might be enjoyed in the country where there are no hot water pipes, or modern bath room with their conveniences.

Do not, in your zeal to have plenty of light in your rooms, loose sight of the fact that you will want something else besides windows in a room. I have seen rooms that were almost completely lined with doors and windows, leaving no wall space for the cozy nooks and corners that render a room so pleasant. Plan to have the windows just where you want them and only there.

If possible, have an entrance hall. Let it be good and large, too, with the staircase at one side or across the farther end, which will bring a landing with a turn, about half way up. This is a very pretty arrangement where a little window of diamond shaped panes of stained glass is placed just at the landing.

Try to plan the new house so that it will be both comfortable and convenient in its arrangement of rooms, and while it is not likely that you will succeed in making it so that it will suit every member of the family exactly, still a little forethought and study of the plan beforehand will be of advantage; by carefully going through the rooms "in your mind" while it still exists only upon paper one can form a pretty good opinion of how it is to be, and any change in the plan can easily be accomplished.

Remember that a few dollars extra cost when building, will do what you, perhaps, would give many times that sum to have done after the building is completed. This applies to height of ceil-

ings, quality of material, and other things which will suggest themselves to the careful builder.

A Pretty Dress For a Child.

The design shown in our illustration is a simple, stylish, and very pretty one for a silk, wool, or gingham dress for a little girl. The model is of pink wash-surah. Above the bretelles and below the sleeve-puffs the silk is covered with figured cream-white lace, and lace edging of the same pattern decorates the sleeves and the bretelles — which are the same at the back as in front, and is turned up from the seam which unites the skirt and the waist. Pink ribbon bows form a neat finish for the bretelles and puffs.

CHILD'S DRESS.

A skirt border of ribbon bands tied with occasional little bows, or an upturned band of the lace, would make the little garment still more dressy, but plain skirts for little ones are very much favored.

A pretty little dress might be made after this design from fine pink gingham trimmed with embroidery, using all-over embroidery for the yoke, and sleeves below the puffs.

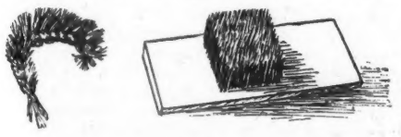
Parents Who Forget.

Papa, were you ever a boy?" said a lad whose father was reproving him rather sternly for some trifling piece of boyish folly. This inability of parents to put themselves in their children's place is a serious fault in much home training. Parents often forget that they, too, were once upon a time young and light hearted, yes, and light headed, too, and while the fact that evil has been is no reason why it should continue to be, we should use judgment as well as mercy in dealing with the errors of youth. It is said that too little training is better than too much, certain it is that the wildest youths are those who have been most vigorously trained at home. Among grown-up sinners there is always joy over one that repents and confesses his faults, but when a little shrinking child, with his poor little heart overweighted with a sense of his crime, comes and confesses the lie that he has told, or the mischief that he has done, he frequently fails to receive the ready sympathy that would not only prevent future concealments, but would often do away with future offenses. It is a matter for doubt whether the implicit obedience that some children render in a machine-like way, generates characters best fitted to withstand temptation. The highest home discipline is that which trains a child to self-government.

Husk Mats.

DORCAS EYELET.

As a good, practical mud-cleaner there is nothing which excels a husk mat. At corn husking time save a bushel of the pliable, tender, inner



HUSK STRAND AND HATCHEL.

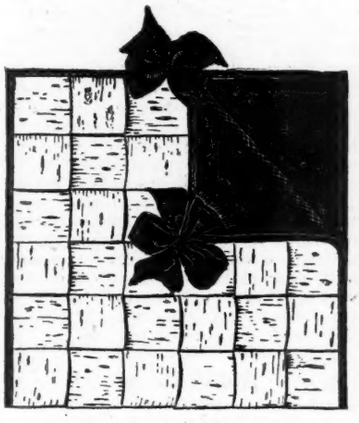
husks for each ordinary sized mat. Dry thoroughly by the fire and stow away until you are ready to use them. In the manufacture you will require a hatchel, which is an inch thick board with a collection of sharply pointed nails driven through, a stout needle and some strong twine. Now take a handful of the husks by their pointed ends and strike them down hard on the hatchel, drawing them quickly off and towards you. This fringes the coarser, stiffer ends, but for hard wear do not fringe them too much. When all are fringed take a small bundle and tie them together tightly with string; have the fringed ends all one way and tie as far from the end as you want the depth or nap of your mat to be. Separate the rest of the bundle into three strands and begin to braid it, laying on three husks—fringed ends up—on top of every strand. When you are through braiding, tie tightly with strong twine. Form the mat by winding this braided piece round and round, sewing as you go on the wrong side with stout twine. You can make them round or oval as you prefer. A mat of this kind will stand the hardest kind of wear, and last a year or more.

Ventilate the Cellar in Winter.

Most farm cellars have no partitions. Thus in one room are stored apples, potatoes, other vegetables, the milk and butter, together with the canned fruits and meat. The cellar is usually located directly under the kitchen and sitting room, and not unfrequently the bedroom. It is a fact that unless the fruit and vegetables are carefully looked over every month there will be a great amount of obnoxious vapor constantly coming from them to contaminate the atmosphere, and being lighter than cold air it will rise to the rooms above. Hence it is best on pleasant days to open the cellar doors and windows for proper ventilation, not leaving them, as many do, tightly closed from early winter until April. Milk and butter quickly absorb the odors from decaying vegetation, injuring the quality and healthfulness.

Birch Bark Handkerchief Case.

A very novel handkerchief case can be made of birch bark. It will require six strips twelve inches long, and twelve six inches long. Weave these in and out, basket fashion. Line with silk over a



NEAT HANDKERCHIEF CASE.

layer of scented wadding, and turn one corner back, fastening it with a bow of ribbon. The whole case is to be bound with narrow ribbon, which may be stitched on. Pink, blue or yellow form pleasing contrasts with the silvery grays and soft browns of the bark. Inch-wide satin ribbon, of contrasting colors, can be woven in like manner. Olive and pink are especially pretty, as are also golden brown and yellow.

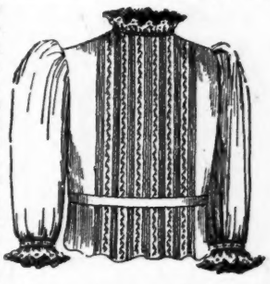
Helps For The Dairy Woman.

M. W. EARLY.

The value of washing soda for cleansing the various dairy utensils cannot be overrated. It is most important to guard against acidity in any vessels used about milk, and there is nothing that will so effectually accomplish this as boiling water and washing soda. All cooking utensils are the better for a thorough boiling once every few weeks in a strong solution of washing soda. A dairy thermometer is very useful, even where only a small amount of churning is to be done. By its aid the housekeeper can accurately test the temperature of her cream, bringing it to the proper point of 60 degrees in winter by the addition of hot water, and lowering it, if necessary, to that degree in summer by the use of cold water. I have seen persons churn a whole day in winter without the butter coming, where, if they had used a thermometer, they might have finished the task in less than an hour.

Girls' Guimp.

The accompanying illustration represents a sheer nainsook guimp trimmed simply with alternate rows of fine tucks and double feather-stitching, and finished with insertion and ruffles of fine needle-work. The tucks are one-eighth of an inch wide, each bunch containing four. Tuck a straight piece of muslin of the required depth, and then cut it after any plain waist pattern that fits the child. Bind the neck with a feather-stitched band of plain nainsook, and finish with a ruffle of embroidery. The sleeves are gathered at the arm-size and again at the wrist, where they are trimmed with a straight band of insertion one inch wide, feather-stitched on either side, and completed with an embroidered ruffle to match the neck. The back is exactly like the front, with the exception of the opening, where the hem takes the place of the middle row of tucks. Around the waist line place a straight band of nainsook on the right side to keep it in place. For a child of two years, this will require five-eighths of a yard of nainsook, three-eighths of a yard of insertion, and one and one-eighth yards of edging.



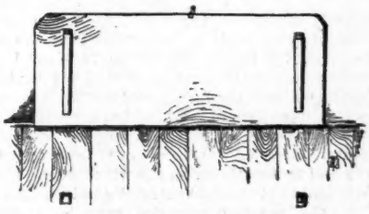
PRETTY GUIMP.

How to Disinfect.

We are warned over and over again to disinfect drains, but it is quite important that we should know just how to do it. At least twice a year dissolve one pound of copperas in six quarts of boiling water, using an old wooden pail kept for the purpose. When thoroughly dissolved, pour the solution down the drain, being most careful that it does not spatter on anything, as it is a powerful poison, and will also stain whatever it touches. The closets should be treated in the same way. Once a week dissolve a pound of washing soda in half a pailful of boiling water and pour it down the sink. It will cleanse the pipes and free them from grease. The garbage pail should be provided with a close cover, no matter whether it be kept under the sink, which is not advisable, or in some outhouse. Empty it once a day, and wash after each emptying. The plan of burning the garbage is a most disagreeable one, sending a vile odor through the whole house and injuring the stove. In the country or in a village where there is no provision for garbage, and where one has a garden, the best way of disposing of it is to dig a pit and each day cover the refuse with a little fresh earth, adding a sprinkling of lime and washing soda each time. Old bones, and all sorts of refuse, can be thrown in this pit, and in six months will become a valuable fertilizer.

A Kitchen Convenience.

Many housewives would like more table room in their kitchens, if only space permitted the introduction of the desired table. The device shown in the illustration may be made to serve a purpose here. A broad "leaf" is hinged to the wall of the kitchen, and turned up against it when not in use.



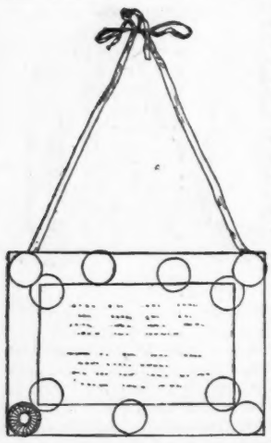
HINGED KITCHEN TABLE.

The two braces that fit into sockets and thus hold it level are hinged to the under surface of the leaf, and fall closely against it when the latter is turned up against the wall. Such an arrangement is simple, but capable of a most convenient purpose.

Wall Decoration.

DORCAS EYELET.

A pretty little wall decoration for a bed-room can be made as follows: Take of thin board, or thick card-board, a rectangle, five by four and one-half inches. Cover it with velvet, or plush, or silk. To the center, glue a smaller rectangle of Bristol board, leaving a space of velvet one inch wide, all around. Two pieces of ribbon fastened to the back and tied together at the other ends, serve to hang it up by. Paste a piece of cambric or silk over the back, to cover the edges. On the Bristol-board, print one or two little verses:



PRETTY BEDROOM ORNAMENT.

Make a little fence of trust all about to-day:
Fill the space with loving work, and therein stay.
Look not thro' the sheltering bars upon the morrow:
God will help thee bear what comes of joy or sorrow.

Outside of this little card, and on the velvet, set little brass rings which have been covered with double crochet of gold-colored silk, arranged in any order desired.

How to Fit a Crush Girdle.

The softly folded broad silk girdles that seem so easily arranged cannot be made to fit neatly without a great deal of care. But they are so quaint

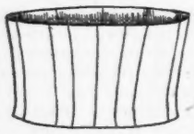


FIG. 1. FRONT.

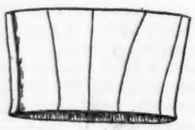


FIG. 2. BACK.

and becoming, so popular with Empire waists, blouses, and Eton jackets that home dress-makers will not begrudge a little extra care in the fitting. A perfectly smooth-fitting girdle lining may be obtained as follows: Put on an old basque or corset cover that has been laid aside, but is known to be an exact fit, and with tailor's chalk, pencil, or basting thread, draw a line around the form where the top of the girdle should come, and another line an inch below the waist line. Remove the garment, cut off all above and below the lines, and the remaining portion will furnish an exact pattern for the lining of the girdle. Of course the fronts are sewed together as shown in Fig. 1, and the opening made at the left under-arm seam as illustrated in Fig. 2. Each seam is boned.

FIG. 3. GIRDLE COMPLETE.

The soft, seamless cover of folded silk is about twice the width of the lining, and arranged in regular soft folds as seen in Fig. 3, which are first pinned in numberless places and afterwards tacked in position. The edges and ends are folded over the lining and tacked down on the wrong side. If the basque lining is of good material and in good condition, the outside material may be entirely removed without ripping, by cutting it away close to each seam and drawing out what is left. Then the lining may be utilized without further trouble. Crush collars of the softly folded silk are pretty and stylish with these dainty girdles.

A Pretty Needle-Book.

The cover of this pretty needle-book, illustrated in Fig. 1, has the usual two pieces of cardboard for foundation, each piece being covered smoothly

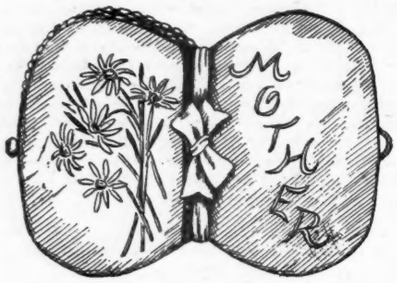


FIG. 1. OUTSIDE OF NEEDLE-BOOK.

on one side with nice silk. For the front cover, the two pieces are simply overhanded together, while—that the broad edge may serve as a pin cushion—a half-inch layer of curled hair is placed between the two pieces for the back cover, and the edge is covered, all around, with a half-inch strip of silk or flannel, which is overhanded to both edges.

The front cover has the word "Mother" embroidered upon the outside, and three pinked flannel needle-leaves are fitted to the inside. The

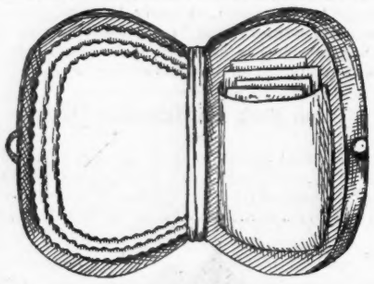


FIG. 2. INSIDE OF NEEDLE-BOOK.

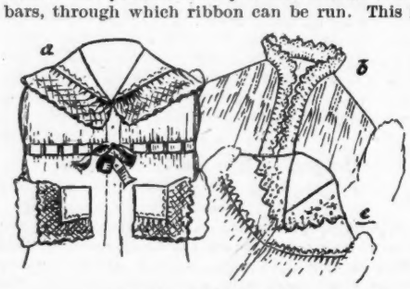
other cover is of figured silk, and on the inside is arranged a little flat pocket, as shown in Fig. 2, for papers of needles.

Narrow ribbon is tied closely over the joining of the covers, while the fastening is accomplished by means of a heavy silk loop and a round-headed gilt pin.

Figured yellow silk was chosen for the covers, but the figure appears only at the back, the rest being cut out of the plain ground between the figures. The lettering was in shades of darker yellow and brown, to match the colors in the figure. A figure on each cover and one on the little pocket would be pretty and easily arranged.

Night Dresses.

Those women who are fond of pretty lingerie will appreciate the dainty night dresses given in this sketch. At *a* is shown a garment made after a sack pattern gathered quite full at the neck with a short yoke formed by a band of needlework bars, through which ribbon can be run. This is



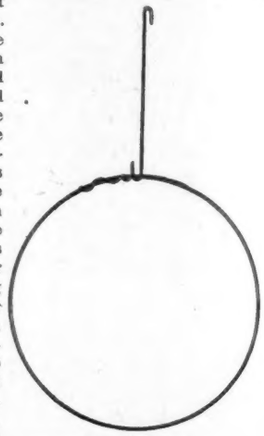
PRETTY NIGHT GOWNS.

easily removed when laundried. A sailor collar, trimmed with lace, finishes the neck, and the full sleeve has a turned over cuff trimmed to match. This is a becoming style for young girls. The dress seen at *b* has a short yoke formed by tucking the material in clusters. A simple ruffle of needlework runs from the waist line around the neck; and that at *c* has a sailor collar formed of wide needlework with the corners mitered to fit the collar. Linen lawn wrappers, for morning wear, are very pretty made after the style presented at *a*, in the accompanying engraving.

Care of Grain Sacks.

NELLIE BURNS.

One of the most disagreeable tasks that falls to the farmer's wife, is the mending of the bags used on the farm. Fully half of the farmers take no care, whatever, of their grain sacks. When not in use they are thrown down in a rat and mouse infested granary, or in the barn, where these bag-loving gnawers are just as plentiful. There comes an occasion when the bags are needed, perhaps for threshing, or for marketing grain. The farmer starts on a search and finally gathers up from 25 to 50 sacks, not one of which is in a condition for use. They are full of holes of all sizes, from a dime piece to that of a man's head. Does this condition of the sacks trouble the farmer? Not a bit. He knows he has some one to mend them. He gathers up a great armful of dirty, musty smelling bags and goes into the house.



GRAIN SACK PRESERVER.

"Sarah," he says to his wife, "I wish you'd mend these bags. I'm in a hurry for 'em." Now perhaps Mrs. Sarah is in the midst of the most pressing duties, but everything must be stopped and the bags be mended so that the farm work can proceed. No one but the woman who is repeatedly called upon, perhaps at the most inconvenient time for herself, knows what a thoroughly disagreeable and aggravating task this bag-mending becomes. And it does seem, in respect to simple justice, farmers should have more feeling for their wives than to request such work of them, when it comes through their own carelessness. A good grade of sacks, if put in a dry place after each use, out of the reach of rats and mice, will last for years without mending. But they should be taken care of promptly after being used. If they are laid down for just one night, it may cause an hour's extra work for the good wife. The following is a simple device for preserving sacks when not in use. Take a piece of smooth, heavy wire about a yard in length, and make a hook at each end. Suspend this from a nail driven into the ceiling of the barn or granary. From another piece of wire make a large sized hoop by twining the ends around each other. Place this in the suspended hook and hang the bags in it. [See illustration]. It should be placed away from walls or from any object from which the rats and mice can reach the bags.

ORNAMENTED BOTTLE.

An Antique Vase.

Take an ordinary glass bottle, no matter how common, if it be prettily shaped, and cover it evenly with putty, flaring it out in thick irregular scallops around the top. With a variety of small rough shells make deep impressions all over the body of the bottle. Then coil a snake made of putty about the slender neck with its head resting on one of the scallops. When the putty becomes perfectly hard give it a coat of bronze. You will be surprised at the elegant and antique appearance of this inexpensive bit of bric-a-brac.

Washing Lamp Wicks.

Lest the protests against women spending time washing old lamp wicks should not be effectual,

let us give an additional reason for abandoning the task. All kerosene contains a certain amount of paraffin. This is taken up by the wick and destroys its capillarity or ability to draw up the oil. Washing will not remove this. So let us part with resignation from our old wicks, wrapping them in a bit of paper and using them, in the words of George Eliot, "to light the cheerful domestic fire."

Pennsylvania Apple Butter.

DR. GEO. G. GROFF.

One of the most delicious and healthful dishes prepared from apples, is made by many farmers, and is known as "Apple butter." It is manufactured from the best sweet cider and the best apples, late in the autumn, and the occassion is generally looked upon in the nature of a grand frolic by the young people, though there is much hard work connected with the savory operation. Long before daylight, the great copper kettle, which has been in the family in many cases for over a century, is brought from some loft at the barn or carriage house, where it has been stored since the last butter boiling, and scoured out with vinegar and salt. This kettle generally has a capacity of over a barrel. It is placed over a roaring wood fire, made in the open air, under the shade of some large tree, and filled with cider, which was made the day before, for in this operation the cider should be used before any fermentation has set in. The boiling of the cider is continued until the bulk is reduced to less than half of the original volume. When the morning work has all been done, the whole family, and often some of the neighbors, begin to pare and quarter the apples. This work must be done with care. All the skin, all bruises, the core and all imperfections must be removed, if a fine quality of butter is desired. This formerly was a long task, keeping five or six persons busy until the noon hour, but the introduction of the paring machine has greatly lightened and shortened the task. The cider having been boiled down to one-half, the peeled and cut apples are gradually introduced, a pailful at a time. The fire is kept burning briskly all the while, and the steam from the kettle ascends in graceful clouds among the branches of the over-spreading tree. With the first introduction of the apples, the work of stirring begins. This is done with an implement having a handle over ten feet in length, with a perforated piece about 20 inches long, fastened at right angles to the handle (see engraving). From noon until ten o'clock at night, the stirring frequently goes on without intermission, for to stop, even for a moment, often means the burning of the butter fast to the bottom of the kettle, which ruin both. The contents of the kettle are boiled until there results a sweet, viscid, dark-colored mass, considerably less than half the original volume. When placed on a plate and no cider separates on cooling, the cider is said to be done. It is then removed from the fire, and dipped into earthern or stoneware crocks, over the tops of which are tied covers of brown paper, and then it is stored away in the garret or in a warm room, where it has been known to keep in good condition for thirty years. When old, the water dries out, but this is easily remedied by adding water at the time it is used.

APPLE-BUTTER MAKING IN PENNSYLVANIA.

Apple butter is a very healthful food, and is in great demand in the markets of the Keystone State. The farmers themselves use large quantities during the winter, when they have an abundance of fatty food, derived from the pork crop. Apple butter in a marked degree aids in the digestion of fatty foods.

In the process of manufacture if both the apples and the cider are sour, sugar is added to suit the taste, though the rule is to use sweet apples when the cider is from sour apples, and to dispense with any sugar. Some makers season the butter with spices, but generally it is best without spices or sugar. In place of apples, pears may be used, or half of pears and half of apples may be employed, which makes a rich, fine butter. When pear cider and pears are used alone, pear butter is the product, which, when well boiled down, is very rich, and not so good an appetizer as the apple butter. Quinces are also used to flavor the butter, but they have too rich an aroma to be used alone.

Holiday Presents.

The strain upon the nerves and physique caused by shopping for Christmas purchases near the holidays is one which few women are able to endure without great suffering. A word to the wise is sufficient. Do your buying as early as possible. The articles put upon the counters during the holiday season are generally bizarre in style, and chosen solely to attract the multitude. All through the year one finds dainty and acceptable articles on bargain counters—often reduced in price for the very reason that they have been in stock for some time, but which are none the less desirable on that account. The dress goods, too, which are offered for sale during the holidays, are too often the old stock cut up into dress lengths, tied with cheap, colored ribbons, and offered as "Christmas dress patterns." Both in buying and making it is wise to "take time by the forelock." Make up your gifts and lay them away in sweet-scented, sachet-lined drawers, to await the genial Christmas time.

Veranda Cushions and Pillows.

ALICE CHITTENDEN.

Someone has described this as an age of pillows. They are strewn and piled everywhere—in a corner of the room, on the piazza, in chairs and on the sofas, and there is really no reason why, when one has a few moments of leisure in this work-a-day world, they should not be comfortable. Feathers suppose a degree of wealth that everyone cannot command, for the best feathers are ninety cents a pound, to say nothing of the best down, which is much more; but there are many other materials with which pillows may be filled acceptably to the tired frame. Now is the season to gather these. Best and most lasting of all is the inner husks of corn, shredded fine—that is, torn in narrow strips—the finer the better. You will like the resinous smell of one stuffed with pine needles. The pillow filled with these should not be more than half a yard square, as they are heavy, and even if you have a small one filled with down on top of it you will get the sweet, balmy, woodsy smell of the pine. Then, if you live in a hop region, anyone will give you hops enough to fill a pillow, and when "tired Nature's sweet restorer, balmy sleep," fails to come at your bidding, just tuck this hop pillow under your head, try to banish care, and sleep will follow. The sweet fern, bayberry and wild rose together make a delicious combination, but to gather these you must begin next June; get the youngest shoots of the former two and gather the rose leaves when they are driest—that is, when not wet with dew or rain. Floor and veranda pillows should be a yard square, encased first in stout, unbleached muslin, with a slip cover over that buttons on and can be removed for the laundry. For summer you want nothing more elaborate than blue denim, turkey red or cretonne. They can be made to look very artistic. Make up the denim light side out, after being washed, with a ruffle torn from the selvedge three inches wide all around; the turkey red may have a ruffle a little wider and doubled. Pile these on top of each other with one of cream cretonne, covered with a briary pattern in wood browns, and you will have a delightful combination of color. The blue denim cover for the fir pillow might have worked on it with white linen or silk floss, in quaint characters, "Give me of your balm, O Fir tree! Of your balsam and your resin."

After doing duty through the summer for the piazza they can be taken in the house in winter, the covers removed and pretty silkoline slips made for them with a wide double frill all around. If, instead of working roses and poppies upon your pillows, you cover them plainly with pretty cretonne or silkoline at ten or fifteen cents a yard, printed with prettier and more artistic flowers

perhaps than you could fashion. your rest will be just as sweet and you will be able to store your mind while resting your body.

Between the Seasons.

The pretty, chic duck linen and piqué tailor costumes, so extravagantly popular throughout the summer, have now retired in favor of those of serge, cloth and cheviot, prepared for autumn, and charming indeed many of these are, in beiges, browns and ocean grays, with accessories of silk or satin. A particularly stylish one, of French manufacture, being of gray wool, the skirt of which is wrought with stitchings of heavy white silk, while a collarette and revers of white satin trim a jaunty jacket, opening over a vest of white guipure. By this it will be seen that the short jacket corsage still remains in vogue, but, if intended to sefve as a wrap as well, it is cut somewhat longer and looser, and has a double collarette or waved revers.

On other than tailor-made suits, black velvet and jet are largely used as decoration. Thus, several bias folds at the foot of a skirt have each a row of narrow jet galloon on the lower edge, while black velvet forms the Empire puffs of the sleeves, a deep collarette and revers turning back from a vest of the dress material, the yoke-shaped top of which is crossed by bands of jet.

Young ladies, too, are very partial to light-hued wools, in cream, gray and wood shades, trimmed with velvet ribbon. Five or seven rows of this ribbon, half an inch in width, encircle the skirt, and a round blouse waist is drawn into a deep black velvet belt, to which bretelles of velvet ribbon are caught by small rosettes. On some of the mastic and beige tints, however, brown velvet is preferred to black.

Dark brown promises to be the leading fall color, especially that known as Havana brown, and for a serviceable dress nothing is better than a hop-sacking of this hue, made with a gored skirt, clearing the ground, widely hemmed and stitched in several rows. The corsage should be a half-long, tight-fitting, double-breasted coat, widening in the seams below the waist line, and worn with a chemisette and four-in-hand tie; or, if better liked, the fronts may be loose, opening to show a shirt of brown or écru surah, trimmed with ruffles, on the edges of which is sewed the very narrowest white guipure lace. With this costume a hat or bonnet of brown rice straw would be pretty, adorned with choux of brown satin and two small pink, red, or yellow wings.

The black note, so much liked in street costumes, likewise appears on evening gowns, and a frock of pale blue or pink silk, is lovely trimmed with black chiffon and black velvet ribbon. A fashionable design has a square-necked, round waist of silk, covered with accordion-plaited chiffon. A twist of black velvet ribbon outlines the neck, and also forms a girdle about the waist. The sleeves are goodly-sized puffs of the silk, with a frill of plaited chiffon below, while two ruches of the same airy fabric, doubled and gathered through the middle, are on the skirt, which is gored at sides and front, but full and demi-trained at the back. With this toilette a twist of velvet ribbon, ending in a bow, is worn in the high hair.

For the "between season" small English turbans of rough straw are greatly liked, especially those that shade from écru to dark brown. These are merely low crowns, with a fold through the center, the sides of which are covered with bias doubled velvet, gathered inside the hat and then drawn up on the outside in a puff, that widens in a point to the front. Four fancy pins are set at intervals in this puff, while on the left side two short black quills stand pretty erect.

A new outing hat, that milliners declare will be seen in city streets next winter, is the "Eulalia," which copies the chapeau worn by the Spanish princess. It is of heavy cloth, with a full Tam-o-Shanter crown, and closely-stitched brim, and the sole trimming is one quill on the left side, sharply inclined toward the front.

Bicycling for women and girls is now so universal that costumes for the wheel must be considered as much as for riding, tennis, bathing, or any other outdoor sports. Indeed, more so, as the safety of the cyclist is often dependent upon proper dress. A sensible rider will have union underwear and discard corsets, substituting one of the easy corset waists, from which the bones have been removed; while a divided skirt in lieu of a petticoat, black hose, and low, broad-toed shoes are veritable essentials. Trimness and service are the things to be considered in the outside gown, and serge and cloth have been chiefly used for the purpose. Better than either, however, is said to be an imported goods, called *cravenétte*, which is warranted both water and dust proof. It comes in all dark shades, and resembles serge, but is less wiry. A modified "bell" skirt, about three yards around, is, perhaps, the best, and this should be lined throughout with satin or farmer's satin, with all the seams turned inward and downward, to prevent catching on the pedals. Between lining and outside a five-inch facing of canvas is inserted, and to this is sewn a double tape, in which is fastened flat shot, to serve as weights. A pocket in the right side, near the front, will also be found a great convenience. The bodice is a perfectly plain, well-fitting habit basque, with postilion tails, and is worn with a linen collar, chemisette, tie and turned-back cuffs, while a sailor or tourist hat and kid or lisle gauntlet gloves complete an ideally suitable and stylish cyclestrienne outfit which will not be conspicuous when off the wheel.

Lamp Shades.

PALMETTA MONTCLAIR.

If anyone doubts that the present generation has made rapid strides in art as applied to house furnishing and decoration, they have only to compare the lamp shades of the present day with those of a generation or so ago. Many of us can remember when people of modest means were quite content to read by the light of a camphine lamp with a paper shade representing the gayest and most inartistic groups of flowers or figures. To-day the lamp and its shade are as important a part of the furnishing of a room as the carpet or chairs or tables and they may cost quite as much too, either singly or together. These creations of richest silk and real lace are not within the reach of most of us, but the most elaborate shades may be copied in simple and inexpensive materials.

The wire frames may be purchased at any large store where lamps are kept. For a large banquet lamp you will need a dollar's worth of the crinkled or crepon tissue paper, while if you are clever you may buy the ordinary paper, and crinkle it yourself, for half that sum. To make the shade, take two sheets of paper, or four if necessary, to go around the outside of the shade, and simply plait it up to fit the neck of the shade, fastening it with a little mucilage. If the width of the paper is not deep enough for the shade, put on an extra frill, leaving a high standing frill of five inches for the neck. Then if you have used red paper, tie about the neck a soft, full bow of satin ribbon in that color. Yellow and red make the prettiest lamp shades, whether of paper or silk. The former sheds a rosy light that is charming, and the latter a golden, mellow glow that is equally beautiful. China silk at 49 cents a yard will make a handsome and not costly shade. Draw silk of the proper depth, which has been pinked about the lower edge, closely around the neck of the frame, leaving a double frill of five inches, with an interlining of soft crinoline. It must be slightly full about the lower edge of the frame and tacked in place at each rib. Then over this a fall of any pretty sheer lace can be dotted, at interval, with little crystal bugles which can also be allowed to drop below the frill at intervals of an inch. When the lamp is lighted, a hundred colored lights seem to flash from these crystals.

Four small lamps of Dresden china are now used instead of a large banquet lamp, and these are all to be fitted with small shades made of paper or silk and lace like those above. For small lamps the upstanding frill must, of course, be narrower. Candle and candlesticks are much affected, and these, too, must have tiny shades, generally of rose color, red, pink or yellow, for which little wire frames may be purchased.

How to Give Old Clothes.

MRS. E. H. COOPER.

When giving clothing to homeless tramps, and other very poor people, it should be remembered that these persons have no means to make even very simple repairs, nor any place where such repairs may be made. The value of your gift will be more than doubled if rents are drawn together, buttons secured, and the garments made wearable. When giving to more respectable persons who are able and willing to coöperate with you, such care is not generally necessary. In such cases, however, all pieces matching the garment should be given with it to facilitate remaking and repairing. Look up a few buttons that match, or a bit of the trimming, if it is tucked away. It is of no further use to you, and may help the new owner.

What the Cook Says.

Gingerbread.—This is not specially an October delicacy, still we first ate this particular gingerbread on a cold October day served at supper with hot coffee. Whichever month you may eat it in we are sure you will award it the premium. Beat one cup of powdered sugar with one half cup of butter and one egg; add one cup of New Orleans molasses, one of sour milk and one teaspoonful of soda dissolved in a little hot water; stir in three cups of sifted flour and one teaspoonful each of ginger and cinnamon; bake in a large shallow pan.

Johnny Cake.—It was during a stay in the famous little State of Rhode Island that we learned how to make the real Rhode Island Johnny Cake. The meal for this purpose is white and finely ground; almost as fine as flour. For six people put seven large iron spoonfuls of the meal in a tin basin, and scald it with boiling water. The water must be rapidly boiling and the meal just wet into a crumbly mass; now thin with milk until it gets to such a consistency that you can mold and shape it in your hands, making it into little cakes two inches in diameter and not more than half an inch thick. Have a large frying pan on the fire; put in a tablespoonful of lard, and when very, very hot lay in as many of the cakes as will lie smoothly; brown on both sides and transfer to a more moderate fire. They must be cooked through. A little experience will enable one to determine when they are done. They are nice at breakfast and are especially welcome when one wants a hot supper dish. Maple syrup, honey or any kind of jam make a nice accompaniment.

Terrapin.—Miss Juliet Corson, who is an authority on this delicacy has given us these directions for opening and cooking a terrapin. Wash the terrapin by shaking about in a tub containing a little water, then plunge it head downward into a large vessel of rapidly boiling water. Cook fifteen minutes or until the skin can be rubbed from the legs with a wet cloth; lift out and put it again over the fire, with just enough water to cover, and when the shells begin to open it is tender. Pull off the under shell and cut the ligaments which fasten it to the upper shell; pull off the legs, and there only remain the intestines massed around the liver, eggs and sandbag. Cut off the liver leaving a small portion attached to the gall in order not to break the latter; put the liver and eggs in cold water. Joint the legs or not, epicures generally leave them whole. It is now ready for the sauce. Mix the yolks of two hard boiled eggs to a smooth paste with a heaping tablespoonful of the best butter; when smooth put over the fire with the terrapin, and heat until thoroughly amalgamated; season with salt and red pepper; draw to the side of the fire and add the yolks of two eggs. Provident housekeepers who wish to increase the size of the dish add a tablespoonful of flour wet with water and enough water to make a pint of the whole.

Uncooked French Cream.—Break the whites of two eggs into an earthen bowl; add an exactly equal measure of cold water and stir in confectioner's sugar, XXX, until you have it stiff enough to be molded.

Fruit Creams.—The cream may be flavored to suit the taste before molding. The juice and grated rind of an orange or lemon makes a nice flavoring, but the juice must be counted in with the quantity of water used or it would thin the cream. To make English walnut, black walnut or butternut creams, press a half kernel on either side of a disc of cream. You can make chocolate nut creams of these by dipping the disc in the chocolate before pressing on the nuts. Large French prunes are delicious if the stones are taken out and the cavity is filled with cream. For cream figs tear the fig in two leaving it joined at the stem end; insert an oblong piece of the cream and press it together again. Dates can be treated in like manner, inserting the cream filling.

Joe's Cry-Baby Sister.

JAMES E. TOWER.

"OE! Joe!! J-o-o-e!" echoed a voice up and down the hill, the prolonged "o" coming faintly back from the wall of forest far up the mountain side. There was no reply, and his mother stepped into the house again. "Sadie, do go and find that boy. I would like to know where he is."

"I think I know where he is, Ma," said Sadie; "he's 'most always in the same place this time of day. Down t' the railroad."

"Down there learning to swear and loaf 'round the depot; go right down and tell him I want him this minute, Sadie! I told him an hour ago to split some kindlings, and he hasn't touched a stick."

It wasn't any fun going down there before those railroad men and loafers to call her brother; she had done it before. But Sadie was a girl who was in the habit of doing her duty, and she put on her sunbonnet and went. The fumes of the pine wood burned in the locomotives of this mountain region greeted her nostrils as she rounded the bend in the road, telling her that the "up" freight was at the station, and making her equally certain that Joe was there to watch the fascinating operation of shifting cars from track to track, and to see the "down" passenger train, which was due in a few minutes. Joe was not the only person who frequented this little station at train time; grown-up men, who ought to have been at work, lounged there every pleasant day.

The first Joe knew of his sister's approach was when an older boy said, tauntingly:

"Yer marmer wants yer, Josie; that's a nice little boy to go right home."

Turning, with flushed cheeks, Joe saw the figure of his sister, in pinafore and sunbonnet, her earnest face as red as his, under the grin of the loungers. She came straight to him without faltering. Before she had time to deliver her message, Joe yelled, with as much savageness and dignity as he could combine,

SADIE.

"What you doin' 'round here, cry-baby? This ain't no place for you. I'll come along when I get ready!"

As his sister was two years older than he and considerably taller, and he only thirteen, this language was as absurd as it was wicked, and it served to provoke a laugh, which poor Sadie, of course, thought was meant for her, and, as she turned to go, some of the bystanders saw a big tear under her long lashes. Whereupon the tall, lanky fireman of the freight turned, where he was oiling the wheels of the locomotive, and his eyeballs rolled as white as a negro's in his oily and grimy face, as he gazed at Joe.

"You hadn't oughter talk like that to yer sister, young feller. It ain't perlite. She's too pretty a little gal to be treated like that." And with these words the fireman hauled himself up into the cab, and, swinging his water jug to his elbow, took a prolonged draught. This much attention, even though uncomplimentary, from a magnate of such importance around the flag station, was the occasion of some elation to Joe, whom none of the railroad men had ever noticed before. It gave him a higher opinion of his sister than he had ever entertained before, too. The minister and the schoolmaster might have spoken similarly and left no impression whatever on Joe. He concluded to go home.

Upon reaching the house Joe got a round scolding for going to the railroad and for treating his sister so cruelly before all those men; for, although Sadie had not repeated his words, her mother knew from her look and manner that she felt deeply hurt. He was sent into the back yard to help his sister take the washing off the line and bring in the clothes, and sullenly enough he went about it. Sadie worked silently, and Joe pitched one clothespin after another into the basket with a vicious fling.

"I tell you I'm going to be a railroad man some day," said Joe, "just as big as any of 'em, and I guess I'll be somebody then, and there won't be any petticoats hanging 'round the track to call me home." And Joe swelled with importance as he thought how big and brave he would look away up on the smoking engine, and how condescendingly he would eye the loungers around the station.

"Nonsense," said his father, who happened along just then, "Sadie'll be a railroad man before you are. Railroad men have to obey rules and attend to business more faithfully than you do."

The next time Joe went to the station was three or four mornings later, when he accompanied his sister to the train. Sadie had been a good girl; she had not been away visiting for three years, and she was going to Bassett's, about thirty miles up the road, to visit her Aunt Mary for a week. His mother could not very well spare Sadie and Joe at the same time, and the latter had not been a particularly good boy of late, so Sadie went alone. He envied her desperately as the train came roaring in, and she got a whole seat to herself and got close up to the window to bid him good-bye. It seemed pretty lonely when Sadie was gone, for as much as Joe despised girls, or thought he did, it came over him that his sister had been a faithful and pleasant companion to him, and he should miss her a great deal, after all. As he walked home there was a lump in his throat which was hard to swallow.

A week later, the day before Sadie's visit was to terminate, there were indications that the autumn rains would begin falling in the mountains very soon. While there might be no trouble from floods at Bassett's, it might be difficult to get home, as there were sometimes washouts in the railroad at that season of the year; so Sadie's parents decided to write to her, telling her that unless she came home right away, before the rains, to remain there till they were over and all danger past. Accordingly her mother wrote a letter, and directed Joe to be sure to get it into that afternoon's mail, in order that Sadie might be sure to receive it the next morning. Joe started out speedily enough, but the post office was beyond the railroad. The mail closed at twenty minutes past three. It was ten minutes past when he came in sight of the track and noticed an unusual commotion. A freight car was off the track, and a concourse of citizens and small boys were intent watching the effort to get it on the rails again. He would just run over and look on a minute; he could reach the post office all right at twenty minutes past, by running. But he was just too late in reaching the post office, and he added to his wrong-doing when he got home, for when his mother inquired if he had mailed the letter in season, he said yes.

There was but one mail a day, so Sadie would not receive the letter till the second morning. That night a drenching rain set in, but her parents

"I'M GOING TO BE A RAILROAD MAN SOME DAY!"

rested easy in the belief that she would not start homeward until the weather cleared. How it did pour that night! As Joe went to sleep he could hear the water roar in the gorge below the house, and he was secretly glad he was not a railroad man that night, to ride in the darkness over the lofty trestles that spanned the mountain stream in its many windings.

In the morning the rain was still coming down in torrents.

"I'm so glad," said Ma, at the breakfast table, "that I wrote Sadie to stay over till after the storm, and not come home to-day. She would come when she promised if she had to risk her life, and I shouldn't wonder if the floods will make trouble with the railroad again. Why, Joe, what ails your appetite this morning?"

Joe was toying with the food on his plate, and looking wretched enough. He knew that his sister, failing to get the letter, would start that day unless compelled by force to stay at her aunt's, and Aunt Mary was not the person to compel Sadie. What *had* he done by his carelessness? Saide's life might be in danger!

Up at Bassett's Sadie was busy packing her bag. In spite of her aunt's entreaties and warnings, she insisted on starting. If the truth were told, a week was quite as long as this affectionate little girl could bear to be away from her mother, and she wanted to go home. The train was on time, at three o'clock that afternoon, and Aunt Mary saw her niece safely aboard.

Early in the evening a rumor was in circulation at Bassett's that the down train had run into a washout in a lonely place in the mountains, and been wrecked, with some loss of life; but no particulars could be obtained. Aunt Mary was nearly frantic with anxiety, and chided herself bitterly that she had not detained Sadie, in spite of everything. The rumor had also got as far in the other direction as Sadie's home, for the train had failed to arrive, and this meant surely a washout, or an accident, or both.

Soon after the train started, Sadie noticed how slowly the cars rounded the curves, and how cautiously it crept across the bridges, from which could be seen the mad rush of the torrent, and she was a bit worried, herself. She had once seen the ruins of two passenger cars lying at the foot of an embankment, a mile or two from her home, after the dreaded floods.

There were only two women in the car, the one passenger coach, and at Ohio Junction these two left the train, with a pitying glance at Sadie, whose remaining companions were five men and a boy. There was a little choking in her throat, but she was a brave girl, and sat as straight and looked as unconcerned as any man of them.

There was a hurried consultation on the plat-

form between the conductor and the fat engineer, a scanning of watches, and the train was moving again. It flew now, instead of creeping, and the raindrops dashed so thick against the windows that the passengers could scarcely see the country through which they passed. Every now and then the brakeman went out on the platform, and, clinging to the railing, craned his neck into the rain and peered ahead. The little company of passengers was getting downright nervous now.

Then a hoarse shriek of the whistle, and a roaring in Sadie's ears. This was the last she could remember when at length she came to her senses. But, even then, where was she? Was she dead or alive? Where was her bag which she had packed so carefully in the morning, and her mother's best umbrella, which she had with her at Aunt Mary's? Faint, and dizzy, and bewildered, she was able in a few moments to look around her.

She was not in the car at all. She was lying on the bank of the creek. Her very best dress, which had been made new just before her visit, was torn and twisted, and saturated with mud and water,—ruined.

It dawned upon her that two men were bending over her, asking questions, but their voices sounded unreal and far away.

"She's all right," said one. "I don't know whether she is or not," said the other. "Can you walk, little girl?"

Sadie made an effort to rise and fell back. The men looked at each other solemnly. One of them lifted her gently. She made no sign of pain, and they both took her and carried her slowly to a building near by. She knew as soon as she was inside, by the odd mixture of odors of merchandise, that it was a freight depot. Two or three men were stretched upon blankets on the floor, very pale. Again the buzzing in Sadie's ears came back, the room swam before her eyes, and all was blank.

Morning dawned at the village where Sadie's parents lived, and the very first light of day found her father and mother and Joe on the station platform, and a few other people besides. Her mother was sobbing. Joe looked as if he would never smile again in this world. The evening before, tortured by the secret he was keeping from his parents, namely that he had not mailed the letter in season, he had thrown his miserable little self into his mother's lap and told her that the letter did not go when she thought.

"Sadie *didn't* start on that train, did she, Ma?" wailed Joe over and over again, but Ma was too sure that Sadie did.

The crowd at the station, awaiting news of the disaster, was growing every minute, and had assumed quite large proportions. About eight o'clock there was heard the sound of a locomotive whistle at a distance. The railroad wound its serpentine course in and out, and sometimes the whistle could be heard, echoing along the ravines, for half an hour before the arrival of the train.

"What's that?" cried one and another.

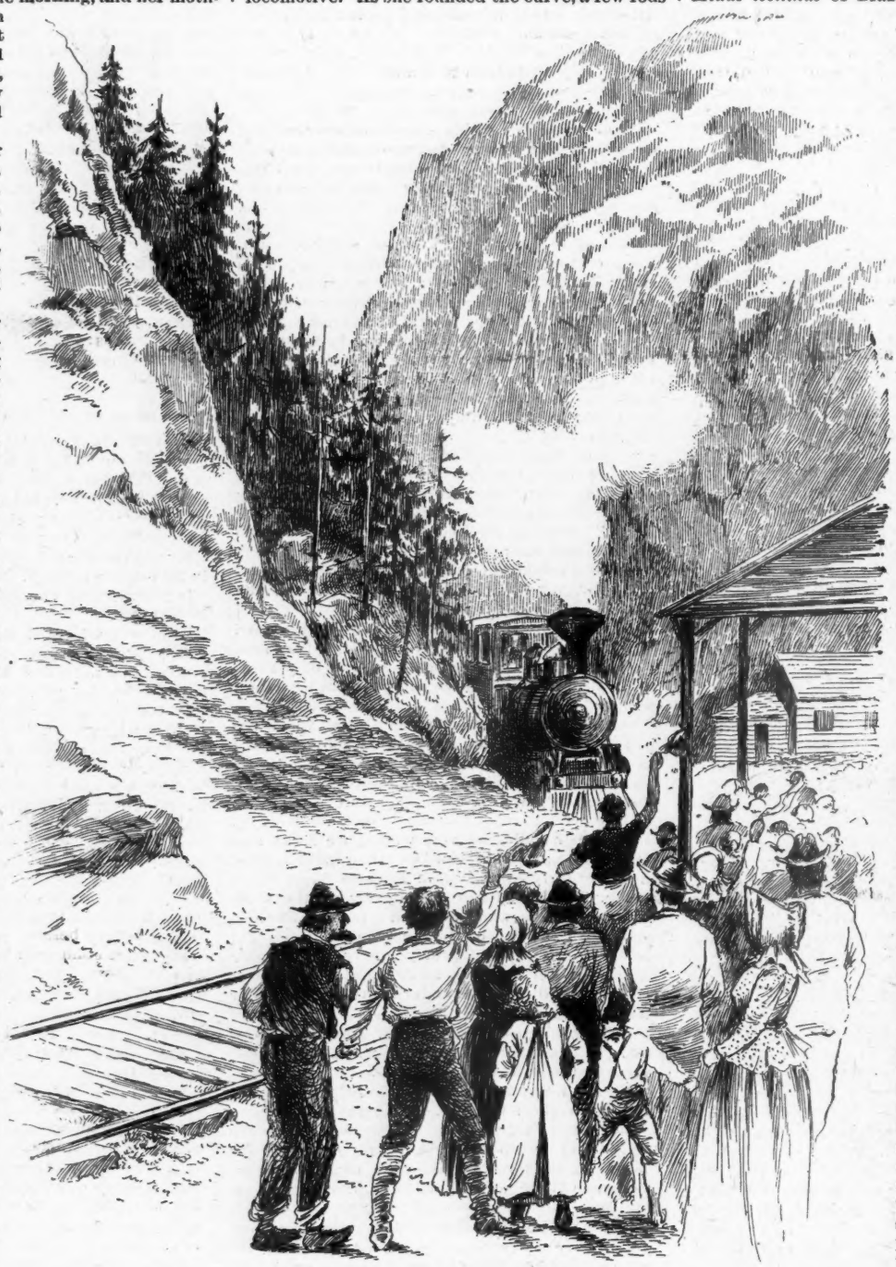
"The freight is up at Seneca, this side of the washout," said the station agent, "and very likely the ingine's comin' down for help, or to bring some of the—wounded," he said, after hesitating; he had almost said "dead and wounded," but caught sight of the agonized face of Sadie's mother.

The whistle sounded nearer. Then the people could see the flashing of steel and brass away over on the locomotive side, as the engine flew around the curves, and glided nearer and nearer.

"Not a single car," said one; "what does that mean?"

"Comin' down for help," said the station agent.

All eyes were strained toward the approaching locomotive. As she rounded the curve, a few rods away, there was a sudden cheer from the crowd that sent the echoes dancing across the mountain chasms.



AFTER THE WRECK.

Up there in the cab window, tattered and mud-soaked, but pulling the greasy bell-rope back and forth, and smiling all over her face, sat Sadie. Beside her stood the lank fireman who had once called her a pretty girl, and on his swarthy countenance was a grin a yard wide, more or less.

Her father and mother and Joe fairly cried for joy, as she was helped down to the platform.

"Nobody was killed," said Sadie, rushing into her mother's arms.

"There," said his father to Joe, "didn't I tell you Sadie would be a railroad man before you was?"

And Joe resolved on the spot to be more faithful and manly, and kinder to his sister.

A Monkey Naturalist.

[A correspondent, Dr. Eugene Murray Aaron, sends us the following interesting account of a pet monkey, commenting upon the fact that this little animal reaches a development in its native home which is unheard of in our less favored climate.]

While residing in the West Indies I had as a pet for a long time a specimen of the diminutive *Midas leoninus* of Brazil, a monkey that rarely exceeds seven inches in length, exclusive of the tail, and which, if cared for, will be likely to return the greatest possible entertainment for the amount of trouble expended upon him. This little pet loved nothing better than to be allowed to occupy one of the capacious pockets of my collecting coat, when I was out on a day's tramp after insects, or exploring some of the upper trails of the nearby mountains on horseback. On such occasions he was no more trouble to me than another explorer would have been. When I had reached my destination, and dismounted to use the butterfly net or the killing bottle, it was his custom to seek the shelter of some tree or large shrub, and from there keep up a chattering that always seemed to be intended as a series of directions and hints to me. At least, I frequently noticed that when a particularly large or showy butterfly came in sight, his chatter took on a much more lively sound, and the warning cluck with which it was always his habit to call my attention to anything unusual was uttered in a louder key. As it was the small and obscure species that I mainly desired to capture, it was often the case that the handsome specimen that had attracted his attention was allowed to pass by unmolested, or, if captured and found to be imperfect, it was allowed to fly out of the net unharmed. On these occasions he manifested both concern and what seemed very like contempt or derision, as he saw the most beautiful prize fly away. There was a certain sort of entomologizing that he could do much better than I, but I was never able to thoroughly break him of the habit of shyly appropriating the especially toothsome beetles and bugs that he caught for his own use. Therefore when I found a rotten log or an old stump, collecting fields where his services were invaluable, it was only by the most constant watchfulness that I was able to prevent the treasures hidden under bark and in decaying wood from finding their way into his capacious little stomach as fast as he dug them out of their strongholds. But if I was watchful and prompt in uttering a reproving word, there was really no difficulty in making him give me the coveted

specimens; however, he always relinquished it with a note of protest, and if he were deprived of a number of finds in succession he grew surly, and retiring to a tree or other coigne of vantage, he would heap upon me all the epithets and bitter denunciation known to his monkey vocabulary.

On one of these trips, as we both were busily engaged in rummaging in the rotten bark of a fallen cocoanut palm, I unearthed a large nest of fire ants (*formige de fogo*) a species of the genus *Mutilla*, noted everywhere for its vicious bite and maddening sting. I promptly called the monkey off that he might not fall a victim to their terrible punishing, but he had to learn the lesson in the school of experience, and so jumped in among them evidently expecting a luscious treat. In an instant, before I could get to him, he was covered with the fiery torments, and began rolling in the dirt and sending up the most terrible yells of fear and pain. Quickly picking him up I ran with him to a brook near at hand and dropped him in, thus freeing him of his tormenters and somewhat cooling him off, but this I did not accomplish before I had been stung in two or three places. When the Midas emerged from his bath—his whole tribe are most expert swimmers — he was already much swollen with the poison of the ants, and as I, too, was suffering in no small degree from the stings that I got, I made straight for home, in spite of the fact that the day's collecting was barely begun. If I had not done so it is likely that I would not have been able to save him from the deadly effects of the Mutilla poison, for he was swollen to twice his natural bulk by the time that I got him where I could administer antidotes and apply alleviating poultices; and even then he seemed so unconscious and limp that I did not expect him to revive. However, in a few days he was apparently as well as ever, and very much wiser, and that, too, in a way that was of great benefit to me.

He had always been more or less of a nuisance when I was busy pinning up or in other ways preserving my captures, delighting, at such times, to pick up and hide or even eat outright some of the trophies spread before me. A few days after his painful introduction to the fire ants he perched himself on my table in his usual position, just after I had pinned into an open box by my side a number of ants of a species closely allied to those that had so unmercifully punished him. Glancing at these it took him but a moment to detect their resemblance to those of painful memory, and with a scream of terror he sprang for my hunting coat —his special place of safety—where he huddled himself into the pocket and kept up a piteous moaning. Acting on this hint I ever afterwards kept a specimen of Mutilla in a box on my table, and I had but to reach for it to put the monkey to flight, and assure myself of a period of peace and quietness. So good was his memory for form that he would recognize and flee from the picture of any ant that resembled the Mutillas, yet pictures of the commoner species, such as constantly run about tropical houses, or of the white ants (*Termites*), were always passed over by him as of no especial significance, and the latter always called out the peculiar cluck that was used to signify his delight at the sight of something good to eat. Many of the whites of the region could very rarely tell one picture from another.

His disposition to mimic everything that he saw me doing made it possible for me to collect a big bunch of flowers, or a pailful of decaying wood earth, and then set the simian at work picking the insects out of them. This he did in quite as thorough and rapid a manner as would any assistant that I could employ in that latitude. His motions were marvelously quick and very delicate; never did I know him to mutilate a specimen with his tiny, dexterous fingers, and he always showed a most respectful fear of the deadly cyanide bottle in which I killed my captures—due to the fact that to keep him away I had once rubbed some red pepper on its rim.

No matter how devious the trail along which he had reached a collecting ground, he could always be trusted to know his way home. Even though he had seemed to be hidden in my pocket and quite oblivious to his surroundings, it was impossible to pass a path along which we had previously come without having him utter many and loud protests against the changed course. When I would alter it to suit him, he would give a succession of the little clucks that meant satisfaction on his part, and would then sink down again into my pocket apparently forgetful of the way, but ready as ever to scold me when I showed the next inclination to wander from the homeward route. His sense of time, or his knowledge of an approaching storm, was shown by the fact that it was only when it was near the home-going hour, or when a storm threatened, that he undertook to control my way and hasten me along the shortest cuts, which he seemed never to forget. On more than one occasion, when we were collecting in a ravine, where the sky was well nigh shut out from our sight, he evinced signs of uneasiness and a desire to go home that were only to be attributed to the fact that he could, in some way not given to me, detect the approaching rain; and more than once I have regretted the display of scepticism on my part that had prevented me from heeding his warnings. In many other ways also he proved that a well-trained monkey of good disposition could be made a most valuable companion to a naturalist in the tropical collecting field.

A Clever Ruse.

MRS. MARY J. PRICKETT.

At the breakfast table, one fine morning in June, Mr. Allerton turned to his son and said:

"John, if you will hoe the weeds out of the little garden, this morning, you may go fishing as soon as the job is done."

Nothing could have pleased John better than this. He was a sturdy lad, thirteen years of age, and a faithful worker, but fishing possessed attractions for him that were almost irresistible.

The creek in which sported the perch, drubs and bullheads, that haunted his dreams almost nightly, flowed through a grove three miles distant from his house, and beneath the shadows of great elms and sycamores lay the "lake," an offshoot from the creek, that was both wide and deep, where fishing was always prime.

Immediately after breakfast John set to work with a will, and in less than three hours the last weed fell beneath his vigorous cuts. Half an hour before the task was finished he called to his mother, and, informing her of his progress, asked her to prepare a lunch for him, so that he might start without delay.

His only sister, little six-year-old Mabel, overheard this, and, going out to where he was at work, began begging him to let her go with him.

"Oh, it's too far for you to walk," he replied. "You are too small to travel so far. And, besides, you'd make so much noise that I wouldn't get a bite all day. And don't you know the big mosquitos and gnats would just chaw you right up?"

"Please let me go with you, Don," pleaded Mabel. "I won't make any noise, and I will walk fast, and I won't get lost, and you won't let the gnats and things eat me. Mamma will let me go if you say I may. Please let me go, won't you, Don?"

This was said in such a plaintive, coaxing way, that John had to surrender. "Oh, you can go, I suppose; but you'll be lots of bother!"

"Oh, no, I won't, Don!" she exclaimed, her eyes sparkling with delight. I'll be still, and walk fast, and won't fall in the creek, and—"

"Well, I'm nearly done here. Run into the house and get ready."

"All wight. I'll be weady in a minute!" and away she scampered.

"Now you must be real good, and do just as John tells you," said Mrs. Allerton, as she fastened a broad-brimmed straw hat on the curly head. "I will place this piece of mosquito netting in the lunch basket, and if you get sleepy John will spread it over you while you take a nap."

"Oh, I won't get sleepy, mamma. I'll help Don fish and pick flowers for you. I won't have any time to go to sleep!"

A few minutes later John entered, carrying in his hand a small pailful of bait, which he had gathered while hoeing the garden, and he was delighted to find that lunch, fishhooks and lines, and everything needed, were packed in the basket and ready.

After kissing mamma good-bye, they set out, John carrying the basket and Mabel trudging along by his side, and chattering away as fast as she could.

When they reached the shady banks of the creek both were quite ready to heartily enjoy their lunch. Mabel spread a newspaper that was in the basket on the grass, and set out the sandwiches, doughnuts, tin cups and flask of milk, while John cut a pole and attached his line to it. Then they sat down, and Mabel presided over the very enjoyable meal in the regular picnic fashion.

After disposing of the lunch, John lost no time in getting his hook into the water, and in less than five minutes drew out a fine perch. For over three hours Mabel sat by his side, sharing his excitement and enjoying the sport quite as much as he. Finally she began to yawn, and in a few moments was sound asleep.

John pulled a quantity of grass, and, making her a soft bed in a clean, shady spot, carried her to it, covered her with the mosquito netting, and then returned to his fishing. Time slipped away so fast that it seemed but a few minutes, until the lengthening shadows and increasing coolness of the breeze warned him that it was time to start homeward.

He roused Mabel, packed his long string of fish in the lunch basket, with grass about them, and they started.

On the way Mabel would stop to pick almost every flower she saw for a "bouquet for mamma," and this delayed them so much that they made slow progress. Finally John's patience became exhausted, and he called to her:

"Now, Mabel, if you don't hurry along I shall run off and leave you!"

"I ain't afwaid!" replied the little midget, confidently.

"Well, you'd better be 'afwaid,' because I'm in a hurry. We must get home before sunset, or we'll get into trouble!"

"I'm coming as fast as I can. I can't wun all the time."

"Well, if you didn't stop to pick every weed, you saw, you'd get along lots faster."

"Ain't weeds; they's flowers for mamma!"

It was nearly sunset when they reached a turn in the road which led them around a large pasture belonging to a neighbor. By crossing this pasture a walk of nearly three-quarters of a mile, over a sandy road, would be avoided. In the pasture was a herd of dairy cows, all quiet, gentle animals, and it was perfectly safe for any one to cross when the bull was not at large. John climbed upon the fence and carefully surveyed the herd, which was quite a distance from the path they would take, and, as he could not see the bull anywhere, he concluded that he was safe in the strong pen where he was kept most of the time. Feeling quite satisfied on this point they started across.

When something over half way, John was terrified to see the bull rise up out of the grass a short distance from the herd.

His first thought was to lie down, but he saw that the animal had observed them the moment he arose. Instantly dropping the basket of fish he grasped Mabel by the hand, saying, in a low, earnest tone, "Don't speak a word, Mabel, but do just as I tell you—run!"

Mabel glanced up in surprise, but the look on John's face frightened her into silence. They hurried along as fast as they could go, John intently listening for the first sound that would indicate that the bull was in pursuit.

It came before they had gone a hundred feet—a sullen, defiant bellow, that brought an earnest prayer from John's white lips.

Mabel knew of the dangerous character of the bull, and, young as she was, instantly realized the danger they were in. "Oh, Don!" she cried, in terror. "Don't speak!" replied John, as he dragged her along as fast as her little legs could carry her.

Another hundred yards and they would be safe. John glanced backward and saw at once that the case was hopeless. With Mabel he would be utterly unable to reach the fence. The infuriated animal was coming at a gallop and in a very few seconds would be upon them. Just before them was a shallow ditch about twelve inches deep, and, quick as thought, John thrust Mabel flat down into it. "Lie there!" he said, almost fiercely. "Lie there, and don't stir till I tell you!"

Then, bounding over her, he darted aside about fifty feet, then away for the fence like a deer, with the bull in hot pursuit.

It was a close call. John threw himself under the fence just as the animal made a desperate lunge at him. The strong barbed wires saved him, throwing the bull back on his haunches, and for a few moments he lay gasping for breath.

Rising to his feet he saw, to his great dismay, that the whole herd of cows were coming toward him. "What if they scent Mabel?" thought he. "She will surely be killed!"

Taking off his jacket, he began flaunting it in the face of the now doubly enraged animal, and run-

ning along the fence toward the upper end of the pasture. The bull rushed along with him, bellowing so loud and fiercely that all the cows came galloping after them. In this way John led them a full quarter of a mile from where Mabel lay. Then, climbing to the top of another fence, which here joined that surrounding the pasture, he called to Mabel at the top of his voice. It was a calm evening, and she heard him. Slowly and cautiously rose the curly head above the grass, higher and higher, until she stood upright.

"Run to the fence as fast as you can!" shouted John.

That was enough. There was a pattering of little feet and a wild tossing of curly locks, and in a few moments a little frightened, white-faced girl rolled under the fence and into her father's arms.

Mrs. Allerton had heard the bellowing of the bull and, almost instantly divining the cause, had sent her husband and the hired man across the field to the pasture. They had come straight to the path which all who crossed the pasture took, and had just reached the fence when they heard John's call. When they saw the little thing coming flying through the grass, they were too much amazed to move or utter a word.

That night Mrs. Allerton gently brushed back the brown curls and kissed the white forehead of her little sleeping girl, then, going into John's room, she drew his head upon her bosom and told him, as only a mother can, how proud she was of her brave boy.

One Lesson of the Times.

HERBERT MYRICK.

I wonder if the boys see the great object lesson which the present hard times has for them. Any bright boy will see it if he gives the matter a little attention. He will find that the great majority of men who are out of employment to-day are those who have no trade, who are not skilled laborers in any department of industry. They do not excel in any one thing. They are the first to be laid off when times become dull and the last to be engaged again. The work for this class of labor is being constantly diminished, as improved and automatic machinery increases. Constantly the number of unskilled laborers is relatively on the increase, and is swelled by the large immigration of ignorant and unskilled workers.

Let no boy make the mistake of failing to learn a trade. Begin early and master some one vocation. Select some trade that you like and thoroughly master it. Three or four years' work will enable any bright young man to do this. If he does it between the time he leaves school and goes to college, he will get far more benefit from his college course than he would otherwise. It will train both mind and hand so that he can make good use of college learning. One never forgets his trade and no one can rob him of it. He always has it to fall back on whatever other business or profession he may go into.

It is not necessary to seek the crowded city trades. You can learn the printing business to better advantage in a small country office than in a city establishment with its many rules and regulations. The same is true of blacksmithing, the painter's, and many other trades. Whatever you start to learn, make a business of it. Not only learn to do your work well, but read all the books and papers upon your trade that you can get hold of. As you master the industry, watch out for every way in which you can improve your work or perfect its processes. Remember that men who get ahead are those who do just this.

Your education is not to be neglected. It is the great foundation of success in any walk in life. Train your mind by all means, but learn a trade if you can, even if you don't intend to follow it. The world has little use for men, young or old, who don't know how to do at least one thing well. The day of the jack of all trades has passed never to return. Trade schools give the best training.

The Jelly and Jim.

Jim is a little black boy who had never seen or tasted any jelly when he came to live with Mr. B. When a saucer of it was sent to him from dinner, Jim thrust his knife into the jelly to put some in his mouth, but as the jelly went sliding off the knife back into the saucer, Jim's eyes rolled open wider than ever, and as he raised his hands and looked at the jelly as it tremblingly slid off the knife, he exclaimed, "*Why hi!* WHAT kind of stuff is dis, anyhow? who we!! Here I's been trying to get it to my mouth, and every time it slips off and goes back into the saucer trembling just like it is skeared to death. I neber seed anything like dat before. Here Bill, you can hang on to de shaky stuff, for it's done taken wid de *chills* too bad for me!"

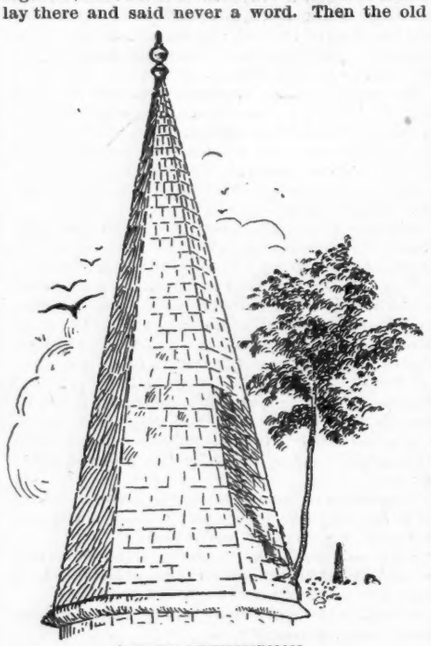
His Bump of the Ridiculous.

"I think," said Uncle Joshua, "thet my bump o' the reedikerlus must be pritty big. I dunno what I'd ever do ef I didn't git so much fun out o' things. Yer Aunt Mandy, now, ain't got no more humor'n a bullfrog. I often tell her ef she'd unly git more fun out o' life—"

"Joshuy," excitedly cried Aunt Mandy, running in from the kitchen, "do come here, quick! The old Shanghai's jumped clean over the coop an' is scratchin' like time in your new lettuce bed."

"The pesky critter!" cried Uncle Joshua, as he dashed out in the garden. Aunt Mandy and Tom, her youthful nephew, who was on a visit, stood at the back door watching him.

Now it happened that the hard garden path was quite slippery after a heavy rain, and while Uncle Joshua leaned over so far forward as to form an acute angle with the earth, in his efforts to catch the Shanghai, he missed his footing and sprawled right over on his face. Tom and Aunt Mandy rushed out, asking him anxiously, both together, if he had hurt himself. But the old man lay there and said never a word. Then the old



A TREE PHENOMENON.

lady cried out in a hopeless voice, "O deary me suz!" and gravely but vigorously motioned her nephew away. He followed her, amazed.

"Why, Aunt Mandy," he cried, "what in time's the matter? You're not going away and leave Uncle Josh like that, are you?"

When she got him in the house again she explained: "Tom, yer Uncle Josh is mad. He's got his obst'nit streak on now, an' Satan only knows when he'll git out of it. He's so mad an' obst'nit thet he won't git up till land knows when."

Her nephew looked at her solemn, distressed face for an instant, then burst out in a loud roar, which was quickly smothered by Aunt Mandy's strong hand over his mouth.

"O, Tom," she pleaded, "please—please don't let him hear ye!"

Tom tried to stop laughing then, but he almost choked in the effort.

A little while afterwards Uncle Josh entered the house, and he didn't look one bit happy. He looked resentfully and suspiciously at Tom's twinkling eyes, and poor Tom, while he felt he was very impolite and unkind, couldn't keep from laughing again. "Please excuse me, Uncle Josh," he said, "but my bump of the ridiculous—he, he, he!—is so big!—"

Uncle Josh looked at him in disgust. "Young man," he said, severely, "you hevn't learnt yit the diff'runce between downright dum foolishness an' humor. Ye're dum foolish jest now, ef ye want to know the truth!"

Phenomena in Vegetation.

ELIZABETH MARABOUT.

The spectacle of a tree standing upon a tower of the Unitarian church in the city of Utica, N. Y., has aroused much interest as well as discussion as to what is really essential to plant life in order that development may continue.

This mountain ash has been growing for thirty years upon a narrow ledge of sandstone, sprouting from a joint in the masonry less than an inch in width; the main stem just above the stone, at the present time, has a diameter of five inches. The tree is fifteen or sixteen feet in height and possibly eight feet across its widest part; the branches are thick and numerous, and for some years each autumn they have been bright with the vivid scarlet berries peculiar to this species of tree.

Protruding from a chink in a mortared wall, forty-two feet above the street, exposed to the glare of the sun in summer and the frosts of many severe winters, its roots only having the mortared interstices of masonry through which to penetrate in search of nutriment, the question may well be asked, where does this tree obtain the elements that enter into the composition of all plant life? Is it possible that it is sustained like the known air plants, by absorbing from the air and through its foliage the elements upon which it lives and thrives? Or does dust settle in the crevices?

At different times similar questions have agitated the scientific world, notably in the case of the Coliseum, that famous ruin of Rome, which was covered for centuries with a wondrous growth of vegetation. Walls, arches and crumbling galleries were green with plants and shrubs, the quantity not more surprising than was the variety and rarity of some of the species. Various theories were advanced to account for the phenomenon; some thought that the mass of masonry raised so high in the air intercepted wandering germs of plants, which the Southern sun quickened into life; others, that the birds that colonized there by thousands and built their nests beneath the jutting frieze, had transported the seeds from distant lands; others, that some property in the cement, prepared in the first century of the Christian era, had proved favorable to exotic vegetation. All was theoretical; no conclusion was reached. But the fact remained that many plants, elsewhere unknown beneath the Italian sky, there blossomed and bore fruit.

About the middle of the eighteenth century an English botanist made an herbarium of "The Flora of the Coliseum," which numbered more than 400 distinct species.

A century ago it was decided that this growth might be, in some undefined manner, prejudicial to the public health, and most of it was removed; to-day only simple flowers, small shrubs and vines remain to tell of the luxuriant vegetation which fringed and crumbled the ragged parapets of that once magnificent amphitheater.

Those who were privileged to see that majestic ruin thus clothed in its garb of beauty, lauded the beneficent mother Nature who, with vines and flowers, kindly concealed the scars of Time. A fragment of verse from an unknown source lends its poetic coloring to this prosaic fact, adds a deeper significance to the idea suggested and invests it with new beauty:

"There is no ruined life beyond the smile of heaven,
And compensating grace for every loss is given;
The Coliseum's shell is loved of flower and vine,
And through its shattered rents the peaceful planets shine."

John's New Baby Carriage.

He was a young man in his working clothes. He had stopped at a store on his way home to supper and bought a baby carriage. Then with a merry whistle he pushed it on with one hand up the street. He didn't keep one hand on it all the time, but kept giving it vigorous little pushes which would send it on a few steps ahead of him. An old acquaintance would occasionally pass him, nod and smile, and say, "Why, John, you got so you have to get a baby carriage?" or, "Why, John, you've started out pretty well, you have, my boy," accompanied by a hearty slap on the shoulder.

Everybody was on such delightfully familiar terms with John. After a little he came to a friend drawing out his own baby. The two stopped and compared notes regarding the carriages. Many a tired man and woman who passed by from their day's work smiled a little, and their tired eyes lit up with a sympathetic interest. When John went further on, a little child went up to him and said, "Is that for the baby that God sent you down from heaven?" adding wisely, "O, my mamma told me all about it." She walked by his side a few steps, and then said timidly, "Say, Mr. Ray, did God give it to you to keep always, or did he just let it come on a visit?"

The man shuddered as he looked into the child's upturned face. He wouldn't talk with her again, and she, with a hurt feeling, left him.

John entered his own yard with the carriage. He thought how happily surprised his wife would be wh[en] she saw what he had brought. His wife met him a[t] the door. Her eyes were very red, and a great heaviness settled on John's spirits. "O, John," she sobbed out on his shoulder, "Baby was taken very sick about an hour ago. The doctor couldn't do anything. And God has—just taken—our baby back!"

Lasting Monuments.

When Joseph Landry donated to the town in which he lived the new "Landry Free Library," the local papers and his own friends proudly called attention to his generous act at every favorable opportunity, and spoke of it as a "noble monument to his name."

Twenty-five years before this man had failed in business, owing some 20 workmen. They did not blame him because he could not then pay them, but sympathized with his misfortune as their own. But when, by the help of friends, he became prosperous and renowned as a public benefactor, they spoke bitterly of him because he would not acknowledge his old debt, now a debt of honor,—saying it was not a legal one. Their children grew up to point him out and say, bitterly, "That is the man who robbed my father." Implanted in the hearts of the families he had wronged was a living monument on which was written a very different inscription from that on the beautiful gift of the Landry Free Library.

It is not given to most of us who live simple commonplace lives to perpetuate our names by a gift to our community or otherwise. We can at least, however, prevent any unjust or cruel deed of ours from living in the hearts of others.

Eels by the Bushel.

HENRY D. TAYLOR.

My father's farm is situated on the seashore, and bordering on the marsh is a splendid pasture, which is watered by a brook. This brook fails every summer, so father dug a well in the upper part of the pasture, about an eighth of a mile from the shore, and about the same distance from the brook. The water was excellent, and the cattle seemed to like it better than that of the brook, and would come the whole length of the pasture, and even cross the brook, to see if there was water in the tub.

Suddenly the cattle refused to drink the well water, and father and one of his men went to clean it out and see what was the matter with it. The man went down the well and father lowered a pail down to him. When it was drawn up it was full of wriggling eels. Father put them into the tub that the cattle drank out of, and when the well was clean they had over five bushels of eels.

They found a place in the side of the well about a foot in diameter which was composed of slimy mud, and through this the eels kept coming. The mud was dug out as far as the man could reach, and the hole filled up with sand and cement. To make the well safe from future invasions, the wall was cemented all over the inside, so that the eels could not work through in another place. This made the water all right for a time, but it was not long before the eels worked in under the wall, and the well had to be abandoned.

Dora was sitting in mamma's lap by the window when the street lamplighter was lighting the lamp in front of the house. After a little the stars came out, one by one. "Mamma," said Dora, "is God lighting the street lamps of heaven?"

OUR LITTLE FOLKS.

Little Boy Jim.

FRANCES H. PERRY.

Ah, little boy, Jim! He's watching to see
If mother is coming; for—sorry is he—
He "*forgot to be good just a minute*," so then
He drowned his poor dolly, and chased the white hen,
Washed kitty with ink, and choked Fido with tea.
But *then* he remembered 'twas *naughty*, did he,
And he longs to tell all to mother.

Now, little boys all, just listen to me;
A brave and a safe little fellow is he,—
With nothing dark hidden, no stories told wrong,
He's a sunny-faced, manly boy all the day long;

LITTLE BOY JIM.

And when in the night-time he wakens to see
The darkness around him, he's glad as can be
That he's told it all to mother.

Ah, little boy, Jim, and little boys all,
As older you grow you may stumble and fall,
May "forget to be good just a minute." Oh, then
Turn swift to the trust of your childhood again.
You'll be never too brave, or too large, or too tall,
To gain comfort and strength, whatever befall,
By telling it all to mother.

Elsie's First Day at School.

E. LOUISE LIDDELL.

Elsie was very fond of looking at pictures and mamma would tell her what they meant. Then the little girl would repeat the story which belonged to each picture, and sometimes would make up a little story of her own.

"I can't read if there isn't any picture," she would say, when a book without illustrations was shown her.

A few days before she was five years old, papa bought her a primer and there was one picture in it which she thought very funny. It was a dog holding a pig by the ear. She asked papa to read her what was printed about it. In a short time she could repeat it word for word, and would say in her droll way, "Wag-has-the-pig-by-the-ear. Go-'way, Wag!"

A few days after her fifth birthday, she begged so hard to go to school, that finally mamma said she might go with Mary and Ellen, two big girls who lived across the street. Elsie was wildly happy and could hardly wait for mamma to brush her hair and put on a clean white apron.

Elsie had a dear little chair to sit in, with a truly desk in front, and thought she never had such a good time in her life.

After a while the pretty teacher, whose name was Miss Tucker, called Elsie out with a class of little folks about her size. After some of the others had read, she opened Elsie's book and asked her if she could read.

Now Elsie was a little bit frightened, with so many bright eyes watching her, but Miss Tucker happened to open the book at the picture of "Wag and the Pig," and when Elsie saw that she was brave all at once. She repeated the page very fast, and really thought she was reading it.

Then Miss Tucker said, "Why, you read so well, I must put you in the first class." Then Elsie was very proud. But a little later when she took her place with the higher class and was asked to read in another place in the book, she said, "Oh, I don't *know that*. I haven't learned any story 'cept "Wag and the Pig,' yet!" She couldn't understand why Ellen and Mary laughed.

Miss Tucker smiled just a little, but said very kindly, "Never mind, dear, you will know all the stories before long." And she did, and could read them too.

The Columbian Prize Description.

MRS. EMILY BUHRER.

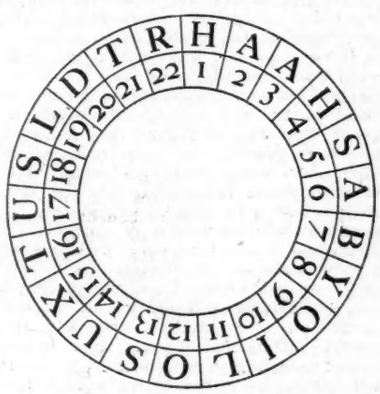
Every reader of the "Book of books" must, on perusing its first pages, form a mental panorama of a World's rising out of Chaos.

A second such picture appeals to us this year of grace, 1893, as it must have appealed to the hearts of those mariners that October morning, 1492. A new land appears whose strand descends to waters clear and changeful, the whole arched by a sky of genial and lucid atmosphere. Plants reared their strong fronds, festooned by clinging growth, new and strange. Rivers whose surface reflected the burnished sands below gave promise of riches. Birds, striking and lovely, charmed the eye and ear. There also stood forth Nature's lords, beings of brotherly likeness, of form supple yet strong, and in whose countenances spoke souls unused to complex fraud or falsehood.

Gratitude alone could at first find place in the mind of that earnest Genoese mariner, who felt himself a mere instrument in the hand of God. By degrees only could his thoughts descend to his fellow man, and rejoice in the fact that he had opened a world of use, beauty and instruction to an existing generation of willing workers, and to countless people to come.

Our October Puzzle.

In this puzzle the first thing is to select a letter to start on, and then to find out how many letters must be skipped before the second letter comes in. When you have found the right letter and the right number to skip, then read on around the



OCTOBER PUZZLE DIAGRAM.

circle, skipping the same number of letters each time and you will read a Bible command that should be heeded by all.

All letters for this department must be addressed to Puzzle Editor, AMERICAN AGRICULTURIST, 52 and 54 Lafayette place, New York, and must be postmarked on or before November 1, 1893.

The prizes will be $3, $2, a year's subscription to the AMERICAN AGRICULTURIST, and two useful and entertaining books.

THE JULY PRIZE WINNERS.

It is not necessary and would take too much space to give in full the answers to the July puzzle. We will say, however, for the benefit of the contestants, that almost the only answers thrown out were many relating to punctuation, for it is not customary and might even lessen the effect to rigidly punctuate display advertisements. If they are punctuated at all, however, they should be punctuated correctly. Almost all the other answers were accepted. The prize winners are: 1, Daniel K. Rœmer, New York, $3; 2, H. A. Schuler, Pennsylvania, AMERICAN AGRICULTURIST telescope; 3, Gertie E. Taylor, Minnesota, a souvenir spoon; 4 and 5, William A. Wales, Texas, and Anna Belle Beaumont, Oklahoma, a book for each.

On the Himalayas, in India.

The Himalayas, situated in the northern part of Hindustan, are a continent of mountains. They rise abruptly from the plains and are two hundred miles wide. From the higher peaks one sees the mountains like vast billows rolling away to the distant sky. One can scarcely imagine what a relief it is to escape from the white heat of the plains to the delightful cool of the mountain sides. Hundreds of families retreat hither during the summer months. Of all the different summer resorts, Naineé Tal is perhaps the most famous, though to our minds, Epworth, near Almora, is the most pleasant, because more removed from the depressing influence of heathenism. The trip up to Epworth would be highly fascinating in every particular, were it not that with a vertical sun, the different valleys are trying, and sometimes full of fever. Many travel at night to avoid the heat. These valleys are cultivated like gardens, with terraced fields rising up the mountain slopes. Grassy spurs rise from the valley, ribbed with the well-beaten paths of grazing kine. The narrow road which we ascended seemed scarcely wider than the one used by the oxen. The "Sahibs" usually hire ponies to carry them up the mountain sides, but the "Memsahibs" are carried by coolies in "dandis." Other coolies carry the bundles. The scenery of the Himalayas far surpasses that of any other mountains on the face of the globe. The others pale into insignificance before these massive bulwarks of snow.

As we continue our ascent, we perceive a huge ravine. From its walls have tumbled long, sloping banks of debris, that join at their bases into a series of ridges. Among these a turbulent stream seeks its way. The coolies, jogging along laughing and singing, seem to keep time with the rythm of the water below. But we would feel much more at ease if they would not go so near the edge of the precipice. They delight in frightening us. Upon rounding a corner we perceive a foaming line of cataracts, white and filmy against the dark background of rocks. Miniature Niagaras, with their whirlpool rapids and hermit cascades, are frequently seen. Although on a much smaller scale, the surroundings of lofty mountains upon whose rocky sides are the stately pines, rosebushes the size of an ordinary apple tree, shrubs, brilliant flowers, delicate ferns and clinging moss, render them equally enchanting, if not so voluminous. At various stages of our progress we could look back and discern our former path immediately beneath us. At last we came in sight of a beautiful little lake called Bhim Tal. A body of clear water, girt in by mountains and sparkling in wondrous brightness as it reflected the rays of the setting sun. A round-topped mountain slope, shut in the lake on the south and west, near the base of which stood the dak-bungalow, in which we were to rest during the night. This cosy, picturesque stone cottage is built on a terrace, and half hidden beneath the roses which lovingly clung to the verandas

These dak-bungalows are beautiful buildings erected upon romantic sites, for the accommodation of mountain travelers. The rooms are provided with beds, but guests are expected to furnish their own bedding. The native cooks will speedily prepare meals at reasonable rates. Feeling much refreshed, the next morning we began another day's march, and ere long found ourselves in the region of the clouds. Looking down upon the distant clouds, so far beneath us, the long belt of forest trees seemed like a strip of low shrubbery, then disappeared altogether as we ascended higher. E. P. SIMMONS, Epworth, India.

Sheep Raising in New Zealand.

We find in this country that the half-breed sheep pay us best, as they cut a good fleece of wool, and are also good mutton sheep. We can get about nine pence per pound for good half-breed wool, and the fat sheep are worth fifteen shillings with six months' wool on them. This is a good little country but it is getting too full of people, besides so many men hold so much land and shear so many sheep that there is little to be got for the small men except at a big price. Land that will carry two sheep to the acre is worth ten pounds per acre. My nearest neighbor shears 65,000 sheep. EDMUND PARSONS, New Zealand.

Stock Raising in Argentina.

In the republic of Argentina the stock breeder is as a rule a large land owner, who finds it more to his taste to live in town and enjoy the pleasures of society, than on his own estate, cut off almost entirely from all intercourse with men of his own standing, and surrounded by herdsmen and guachos who have little or no respect for life and property. The consequence is that he leaves the entire management of his stock to ignorant foremen whose only object is to fill their own pockets at their master's expense. Of course, there are exceptions where educated men make their homes in the camp or visit their farms once or twice a month; but these are rare and only to be found where a foreigner is the patron.

Stock raising is of more importance than the cultivation of the land, and probably will be for many years to come, as help is scarce, and much less labor is required, while returns can be looked for much sooner. Cattle, horses, sheep, goats, ostriches, and a few pigs are the chief stock bred in Argentina. Of these the first is the most important in all parts of the republic with the exception of the province of Buenos Ayres where there are six times as many sheep as cattle. Sheep have been much improved during recent years by large importations from England and France, but there still remains a large field for improvement, especially as regards cross-bred animals, combining good wool with large carcasses of first-class meat. An error which the Argentine farmers often make is pasturing their fine Merinos on low ground, where a Lincoln could not be expected to thrive, and giving the hardiest sheep the very best pasture.

Although the cattle are steadily improving it will take some time before the ordinary types of stock are ready for the European markets. The desired results would be much sooner attained were it not that the general run of breeders are averse to spending money in pure-bred sires, and think it quite as well to use cross-breds for their general stock. The cross-bred cattle consist chiefly of the Shorthorn type, but of late there has been an interest taken in Herefords, Aberdeen-Angus, Devons and Jerseys.

F. LODIA, Buenos Ayres, S. A.

Irrigation in Arizona.

Fifteen years ago the valleys of Southeastern Arizona had nutritious grasses waving everywhere in the summer breezes. Except in a few places on foothill streams, there were no settlers. The Chiricahua Apache Indians were liable at any moment to kill the ranchman and run off his stock. The same valleys now are, in many localities, little better than sandy deserts. This great change has been brought about by certain obvious causes. About 1881 grass was unusually abundant; prices for beef were high; cattlemen located ranches so rapidly that Indian raids were checked, and by 1884 the whole country was occupied by great herds, mostly of scrub stock. About 1886 the summer rains became uncertain both as to amount and dispersion. Ever since then these evils have on the whole increased, though there have been one or two seasons less hurtful than the others. In 1892 the rains were very light, though some localities were specially favored. As the ranges were overstocked, perennial brush grasses were not allowed to retain sufficient green blades to digest the plant food, and were gradually killed. Most of the native grasses have small seeds which ripen about September. These seeds do not germinate freely even under favorable circumstances, and when they fall late in the season on hard, bare surfaces they do nothing towards reseeding the ground. The light rains of the past few years have merely kept the cattle-growing business in existence. There has been no advancement, and, except in rare instances, working expenses have exceeded returns. The losses during the past winter have been very heavy—in many places from forty to fifty per cent. The improved stock now on the ranges die of starvation more readily than the old Mexican herds, which in hard times could take to the mountains, as some of their descendants do still, and browse on the leaves and twigs of trees. It is fortunate that under the circumstances described, there are business men far-seeing enough to suggest and adopt a remedy which in the end will add immensely to the resources of the country. In the railroad town of Willcox a company was formed a few months ago, for the purpose of managing a farm, where, by means of steam pumps and irrigation, the capacity of the Great Sulphur Spring valley for alfalfa growing might be demonstrated.

At the depth of 25 to 30 feet an abundant supply of pure water was obtained, and for the first time since the world began, that seemingly unpromising neighborhood as to agricultural possibilities has displayed a good-sized tract green with thriving lucern, alike agreeable to the eye and promising in forage results. It is believed that an underground stream can be tapped at many points in the valley, especially along a central line, and that both artesian and pumped water may be found for irrigation purposes. Should these expectations be realized the time will come when small herds of choice cattle, fattened on alfalfa, will yield better profits to their owners than have been obtained from range stock. The region south of Willcox is well adapted for the growth of fruits and all the ordinary farm crops. Experiments have proved that beans and the various kinds of clover can be profitably grown. The future is necessarily dependent upon the successful development of water supplies, but so far everything done in that direction is encouraging.

JOHN DARE EMERSLEY, Cochise Co., Ariz.

Cattle in North Dakota.

That there is no better land for grazing than the western part of North Dakota is proven by several facts. Tens of thousands of Texas cattle are now driven northward yearly, their destiny being the rich lands of the West Missouri, there to "double winter," and then be forwarded to the Eastern markets. North Dakota range steers are quoted higher than other range steers. A drive from the ranches near Mandan up the Cannon Ball from where it empties into the Missouri river, below old Fort Rice, then over on the Heart, through to Dickinson on the Heart, where the N. P. R. R. have yards for shipping, thence north along the little Missouri to Fort Berthold, down south to Mandan again, shows the great grazing ground of the Northwest. Here, with the exception of 1886, have been the finest winter ranges, where the cattle for years have wintered finely, with that one year a fearful exception. But many of the small ranchmen, and some of the cattlemen, cut much of the grass and stack hay in abundance ready for such a winter. Many a place can be selected where a thousand tons of hay can be cut. With safeguards so easily within reach it would seem plenty of hay would be put up. But the small ranchmen usually provide abundance. This question of big and little cattlemen must be settled some day, or the ranges will be cut up and practically destroyed. Both sides are partly right. It would seem to me to be the wiser plan for all to agree to this way of settlement: "Corall in every hoof, from the mountain line north of the N. P. R. R. and south of Little Missouri to the Big Muddy," the same as in other localities, and count heads, giving each man his share in stock of a capitalized concern, allowing the little men first to increase their stock if they wished, then let them all turn in and work for the big company. This would avoid a repetition of the spring difficulty. The Dakota range is mostly rolling, often about headlands, where fine shelter is furnished against the storm. North Dakota shows over 150 different kinds of grass at the World's fair, all growing wild on this grazing ground. Many species taken and cultivated will equal timothy, clover or blue grass.

J. C. WADE, Stutsman Co., N. D.

The Minnesota Pipestone Country.

Pipestone, Minnesota, is noted for its quarries of the beautiful red stone from which the town and county are named. About once a year the Indians come to these quarries, which are situated on a small reservation belonging exclusively to them, and dig out a sufficient quantity of the stone for the making of ornaments, fancy hatchets, paper weights in the form of horseshoes, owls and other designs. Some of the carved articles show considerable skill, though from lack of proper tools, the regularity and finish does not compare with the work of white men. A red man will spend a week's labor upon a carved hatchet

or pipe, which he will sell for a dollar. The quarries of Pipestone county supply, too, a fine quality of red building stone. Unlike the pipestone, this is hard and not readily worked. The jasper-trimmed, red stone buildings of Pipestone are a distinctive feature of the town. Pretty wind-polished fragments of jasper are frequent, and make fine cabinet specimens. Of the true pipestone there are various colors. The light pink, on account of rarity, is considered the most valuable color. Besides the pink there is to be found plain brick red, red marbled with white, and various shades of red, brown pink, and even yellowish, blended, mingled and mottled, or in plain colors. The stone in the pipestone quarries is now said to be about nine feet below the surface of the ground, and every time the Indians dig a supply of stone they remove the nine feet of earth covering it, and afterwards as carefully filling it in again to prevent depredation by white people. The ladies of Pipestone have prepared and sent to the World's Fair a mantel of this beautiful stone, which is attracting a great deal of attention from its associations and traditions as well as from the rare beauty of the stone.

F. ARGYNNIS, Traverse Co., Minn.

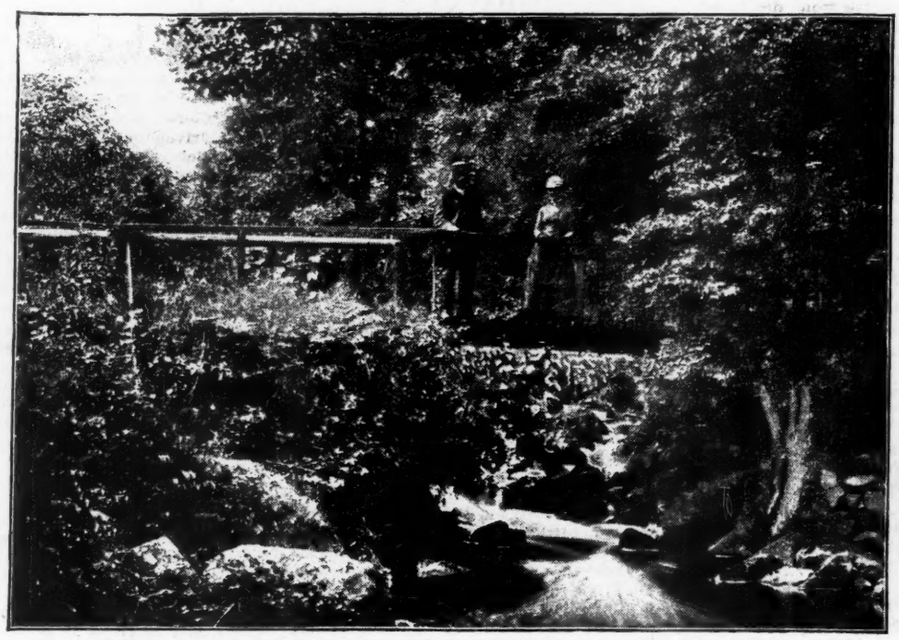
Values of Vermont Farms.

Some farms in Vermont are sold at a price less than the cost of the buildings thereon. Paradoxical as it may seem, this fact is by no means an indication of a depreciation in value of those farms. Of late years there has been a marked tendency towards larger farms, cultivated by means of improved machinery and hired help. But until about twenty-five years ago, it was the general custom for a farmer to cultivate only as much land as he and his family could manage without machinery and with no expenditure for hired help. If he owned more land, it was as a rule either pastured so heavily as to become in a few years practically worthless, or else allowed to grow up to bushes and noxious weeds. Without accurate statistics, I will venture the assertion that twenty years ago the number of farms in this State containing less than forty acres of cultivated land, was far greater than the number containing more. The annual production of one of these small farms was, perhaps, a net cash profit of $100 above all expenses. Now, notwithstanding the valuation placed upon this farm by its owner, or by others, its real value was that sum, the annual interest of which was equal to the annual profit of the farm, or a little more than $1,600. In time the owner, by untiring industry and the strictest economy, becomes wealthy, comparatively speaking. He now erects a set of buildings at a cost of $10,000. He has previously inclosed and divided the little farm with a mile or more of stone wall, at a cost of more than one dollar per rod, so that the apparent value of the place now approximates $12,000. But this sum is by no means the true value of the farm. The new buildings have possibly doubled the annual profit, which may be derived from it. In this case, the real value as a farm has been doubled and no more. Or the improvements may have added nothing to its productive capacity, in which case the real value of the farm for farming is no greater than before. At length the farm is offered for sale. In most cases this is done by an administrator and for the purpose of settling the estate. It is sold at a so-called sacrifice for $10,000. The buyer pays $2,000 down and mortgages for the remainder. Now the length of time that the buyer remains in possession of this farm, depends almost wholly upon the leniency of the mortgagee. Not because he is a poor farmer, for such may not be the case, nor because the farm has decreased in value, for during his ownership it may largely increase in its productive capacity, but simply because its capacity is not sufficient to give a profit equal to the annual interest on the amount unpaid. Failure in such and similar cases is and must be inevitable; no matter in what State the farm may be located, it cannot be avoided.

C. O. ORMSBEE, Washington Co., Vt.

A Picturesque Spot in Cornwall.

Although Cornwall is popularly supposed to be one of the most rugged counties in England, it yet possesses some picturesque scenes which rival Kent or Surrey in sylvan beauty. The traveler cannot pass through this part of the country without noticing two characteristic features. One is the small size of the fields, ranging from a half to three-quarters of an acre; the other is the comparative prosperity which the farmers and their laborers enjoy. Wages for farm hands in this part of rural England are rather higher than prevail in the Eastern counties, and average about sixteen shillings or $4 a week. The people are sober and industrious in their habits, and there is less actual poverty in Cornwall than in many other parts of England. I may say, incidentally, that although I traveled over a large part of the county last summer, I saw very little wheat under cultivation, and many farmers told me that it paid them to buy their flour from a local miller and give more attention to stock raising. In spite of the damp climate, the Cornish people are a hardy race and still maintain several of their old pastimes, including the famous wrestling bouts. [The scene shown in the accompanying engraving, from a photograph, illustrates one of the many picturesque little spots which are scattered over the county of Cornwall, England.]



A PICTURESQUE SPOT IN CORNWALL.

F. C. CHAPPELL, England.

In the Georgia Mountains.

The price of land is by no means high in the mountains, except for favored spots, or where there are supposed to be deposits of gold in the quartz rock. There is but little market for produce or for wood; there is, of course, more or less sold at the towns, but it is usually less rather than more, and the prices are generally small. The mountaineer, unless he puts his corn into liquid form must be content to grow just enough for the subsistence of his family. Some have quite good orchards, but even fruit is not in great demand, and often the fruit grower is compelled to almost give his pears or apricots away. The usual market price for fine peaches at a mountain town is twenty-five cents a bushel, while strawberries, hulled, sell for eight or ten cents a quart. Unless the seller hulls his berries he is quite likely to find no purchaser at all. Yet the mountains, although they do not, as yet, offer inducements to settlers, are beautiful in the extreme, and one might well be content to live among them for the very pleasure of existence there. A fine, healthy looking race are the native mountaineers. Splendidly formed, supple limbed, clear eyed, with such perfect ease and absence of embarrassment as would do credit to men and women trained in society from their youth up; they are a hardy and noteworthy race. Handsome, too, most of them are, and some of the women are positively beautiful. I speak, of course, of the native types in such parts of the mountain country as have not been invaded by the gold-mining element, for outsiders, and the children of mountaineers who have married with them, are necessarily of a different class. It should not be thought, as some really think, that all of Northern Georgia is mountainous, for, between the mountain ranges, are some broad and fertile valleys, miles in width and many miles in length, and these valleys contain fine farming land, and should, year by year, become more valuable. R. SHACKLETON, Rabun Co., Ga.

Farming in Middle Tennessee.

This climate has but six weeks of winter weather, a long spring and summer, frosts seldom occur, and health is unsurpassed. I have been visiting the section of farming country through middle Tennessee, Rutherford county, situated thirty miles south of the capital of the State, Nashville, in what is called the middle basin. The land in this, as in many parts of the South, is being divided into 100 to 400-acre tracts from the larger cotton plantations, that embraced thousands of acres when their owners managed them under slavery methods who, since the war, are either dead and buried, or poor. Finding it necessary to sell some land, to keep the remaining portion, they are land poor. The Northern farmers are gradually working into this section and astonishing the old residents by bringing forth crops, in a few seasons, from land that was considered worthless. Cotton growing having been constantly carried on with light, careless cultivation, the land gave out and was finally abandoned. I have met a number of farmers from Ohio and they are doing well; nothing could induce them to return North again, as they can make more money, obtain labor cheaply and as good help as one could desire. The land in this fertile section is usually a red, clayish soil, but remarkably fertile, and there is, also, a chocolate soil, that is always fine, but no better than the rich red soil. The limestone deposits help to keep these soils rich, and natural drainage by sink holes do away largely with tile drainage, although here and there tile could be used to great advantage. There is a grand opportunity here for good, industrious farmers. Kind and courteous treatment is assured to any good citizen who keeps his tongue bridled and trys to live uprightly. Lands can be bought here from $20 to $40 for the best, and poor sections, containing more or less timber, cedar, oak, elm and maple, from $5 to $15. These timber lands lie out some 15 miles from the towns. Some of them are stony, but for sheep or cattle they can be used with profit to their owner, and the winters are so mild that stock can feed out in the fields about ten months of the year. Fruit raising is also profitable. Peaches, apples, pears, apricots, melons, grapes, and all kinds of small berries, and vegetables grow easily and luxuriantly, and the climate brings them into condition, and into the Northern markets six or eight weeks before they are ready to put on the market by Northern farmers and gardeners.

JOHN W. CAUGHEY, Rutherford Co., Tenn.

Branching Aralias.—N. C. E., Cook Co., Ill.: *Acanthopanax ricinifolium* is a synonym of *Aralia Maximowiczii*, a coarse-growing Japanese shrub, with straight, spiny stems, six to ten feet high, these occasionally throwing out short, stumpy branches near the summit. *Dimorphanthus mandschuricus* is different from the above, or at least so claimed, having much longer leaves, and these very hairy and prickly. It is a true aralia, and believed to be only a varietyof the *A. chinensis*, and of a similar habit to our native angelica tree, or Hercules Club, so common in thickets along river banks from Pennsylvania southward. Under favorable conditions, this species grows taller than either the Japan or Chinese species, and is a very showy ornamental plant.

Weight of Water.—F. Johnson, Monroe Co., N. Y.: One gallon of pure distilled water weighs ten pounds, but the same quantity of sea water weighs 10.22 pounds, the increase in weight being due to the salt and other impurities in it. One cubic foot contains eight and one-fourth imperial gallons, and thirty-six cubic feet will weigh one ton. One hundredth of an inch of rain on an acre will weigh one ton; consequently, one inch of rain will weigh one hundred tons. A nominal horse power for a boiler requires one cubic foot of water per hour.

Hardy Orange.—Subscriber, Richland Co., N. Y.: We could not advise you to plant the Japan orange (*Citrus trifoliata*) for an ornamental hedge, because there is some doubt as to its being hardy so far north. It is widely recommended as a hardy species, but old and well-established specimens were killed to the ground in our garden the past winter, although growing in a dry and well-drained soil, and a somewhat protected situation. In localities south of New York city it may prove hardy.

White Fir.—Visitor, Georgetown, Col.: The evergreen twig you send is from the White Fir or Black Balsam (*Abies concolor*), a very handsome and hardy tree, common almost everywhere in the Rocky Mountains. You will be able to find small specimens in the Eastern nurseries, if you look through their catalogues when you return home. This tree is exceedingly variable in the length and color of its leaves. In some they are three or four inches long and sharp pointed, while in others they are short and blunt. They also vary in color, from a deep green to a light glaucous or bluish green. In one more common variety in nurseries, the leaves are curved upward, somewhat like the ribs of a vessel. But it is a handsome evergreen in all its many varieties, and deserves to be better known in gardens than it is at the present time.

Geranium Beetles.—B. Onderdonk, Suffolk Co., N. Y.: Several of our correspondents residing on Long Island have written us complaining of some kind of bug or beetle destroying the leaves of their geraniums, but, like yourself they fail to send us specimens for identification. Now, as the geranium is rarely attacked by insects when planted out in gardens, we are the more interested in this pest which seems to have recently appeared on Long Island, and would feel much obliged if some one will take the trouble to send us a few perfect specimens. Perhaps it is some well-known native insect, that has recently acquired a taste for bedding-out geraniums.

Wormy Quinces.—J. Sulzer, Monmouth Co., N. J.: We fully agree with you in regard to the appearance of the great bulk of all the quinces sold or sent to our markets, for it is mainly a wormy, knotty and scabby lot, and its condition not only injures its sale, but greatly lessens its value for domestic purposes. The grower's losses begin with the premature dropping of the fruit, the result of attacks of insects and fungous diseases; and that which holds on until the time arrives for gathering the crop is more or less affected, as shown in its small size and scabby appearance. The worms in the fruit are mainly the larvæ of the codlin moth, and may be destroyed by lightly spraying the bushes once or twice early in the season, soon after the fruit is formed, with Paris green or London purple, while the Bordeaux mixture will kill the leaf and fruit blight. With such cheap and ready remedies at hand, wormy and other imperfect quinces should soon disappear from our markets.

Protecting Grapevines.—W. F. B., Cook Co., Ill.: The canes of grapevines that are laid down in autumn and covered with soil or other materials, for protection, must be fully mature, else they will decay. For this reason we would advise early pinching, to check growth and ripening of the wood, especially that which will be needed next season for bearing fruit. In very rich and moist soils, vines are very likely to grow vigorously up to the time of frosts, then the sudden check leaves much immature and worthless wood to be cut away in pruning. All the soft, half-ripened canes should be cut away before the vines are laid down for winter, even if the final pruning of the vines is deferred until early spring. It is a waste of time to bury a great mass of canes which will not be wanted, and have to be cut away when the vines are lifted in spring.

Preparing a Rain Barrel.—J. Bensen, Coos Co., N. H.: Though barrels may be used for catching a supply of rain water, if only the best should be selected, yet they will prove bad enough; so bad, in fact, that every householder should discard them and put in a cistern, which, for a small family, should hold not less than thirty barrels. Thousands of housewives with large families are obliged to depend upon the common rain barrel for a supply of soft water for dish washing, scrubbing, and the weekly family washing. An oil barrel, whether kerosene or other oil, is the best for the purpose. Knock out the head and clean out the barrel by scraping with a knife. Throw in some lighted papers, and let it burn for at least three minutes, or until the outside of the staves feels hot, then throw in water or loose earth to extinguish the flames. Even if the inside be a little charred, there will then be no danger of the oil tainting the water. The oil left in the staves will prevent the expansion and contraction which destroys common barrels.

Cellar Windows and Screens.—B. A. Clark, St. Clair Co., Mich.: For use during the cold weather, cellar windows should be made double by putting glass upon both sides of the sash. Thus made, the expense is nearly one-half more than when made single lighted, but it admits plenty of light to the cellar, without the risk of freezing. The air chamber between the glass acts as a non-conductor of heat. This is far better than using a single thickness of glass, and each winter stuffing it full of straw or other material, which makes the cellar as dark as a dungeon. An outside guard should be placed at each window, and nothing will prove better for this than a strong wire screen. It should be of heavy wire, and not over a quarter-inch mesh. For convenience, nail the woven wire to a light frame and keep it painted, as its position causes it to rust very rapidly unless thus protected.

Virginia Creeper.—M. J. Steele, Washington Co., Pa.: We do not think that the Virginia Creeper will do any harm to an oak tree, even if it covers every inch of its stem. Should the vine overtop the tree and shade its leaves it might prove injurious but this is not very likely to occur. We plant the Virginia Creeper as well as the Japan species (*Ampelopsis tricuspidata*) about the stems of large trees of various kinds, and have never noticed any injurious results, in fact, we are inclined to think the shading of the stems is more likely to prove beneficial than otherwise.

Grafting Nut Trees.—J. Alexander Fulton, Kent Co., Del.: The grafting of nut trees is usually performed in spring, and almost in the same manner as practiced with apples and pears, but for some unknown reason the pecans and ordinary species of the hickory rarely respond to the manipulation of the most skillful propagator of plants. The chestnut and English walnut—also the common butternut—are successfully grafted in the open air by many of our nurserymen, and the main thing to insure success consists in making a close-fitting joint between cion and stalk, and then covering all the exposed wood of the wounds made with grafting wax. The cions may be cut in winter and stored in sand or damp moss, then when the buds on the stalks begin to push in spring insert the cions with all the skill and care of your command. The English walnut will grow on the black walnut but the common butternut is the better stock.

Handling Firearms.—L. D. Snook, Yates Co., N. Y., writes us: "Many people have a dread of the sight of guns and pistols, yet in most cases it should be placed in the same line of fear as that caused by the unexpected appearance of a harmless mouse. While they are not absolutely necessary, yet there is no question but that all persons of both sexes who are fifteen or more years of age should make themselves familiar with the use of both the gun and revolver. While they may never have occasion to use them as weapons of defense, or for sporting purposes, yet the familiarity of their use, banishes the fear of mortal danger when seeing them used, and in cases of necessity their presence and manipulation may save many lives. Firearms are no more playthings than is a razor or a box of matches, and should, like the articles named, be kept in a place of safety, and especially out of reach of children. After a timid person has fired off a lightly-charged pistol or gun, the fear is gone, and they are happier for the experience."

Hauling Manure.—J. Frame, Somerset Co., N. J.: The operation of getting the barnyard manure from the yard to the field, and evenly spread thereon, is one of the hardest labors connected with farming. This can be greatly obviated by the exercise of a little forethought. In the first place, much of this manure should have been hauled out on a sleigh during the leisure of winter and early spring, and, furthermore, if left for late spring hauling, select some day or days when the ground is hard and dry, even if you are obliged to neglect some other work. Do not follow the plan adopted by many, and neglect hauling until you are ready to plow the corn ground, for at that season heavy rains often fall, adding almost half to the weight of the already damp manure, making the work of handling twice as laborious, and the team and loaded wagons deeply rut and trample the field and lane. If the season is late you cannot wait, and even by waiting you are not assured of good weather. Use a wagon with low wheels and wide tire. It will be easier for man and beast, and prevent injury to the soil.

Grasses For Name.—L. E. Hall, Ulster Co., N. Y.: The grasses you send for name are, No. 1, Couch or Quitch grass (*Triticum repens*), a very difficult species to get rid of when it once gets possession of a firm, rich soil. It is, however, an excellent pasture grass, and cattle relish it while green as well as when cut and cured for hay. No. 2 is "Sweet-scented Vernal grass, (*Anthoxanthum odoratum*). An introduced species and one of the earliest as well as latest in autumn. It is a very fragrant grass and imparts to hay a peculiar fragrance. It is not considered of much value in the way of nutritive properties, and alone, cattle do not seem to relish it, but when mixed with other kinds it is readily eaten. Its only value is its early growth in spring. No. 3 is Tall Fescue grass (*Festuca elatior*), a tall growing perennial species very highly valued in the Middle and Southern States for both pasture and hay. It is almost an evergreen in Kentucky and southward, consequently very valuable for pasture.

The Timber Supply.—Dyce McLorne, Richland Co., Wis.: The substitution of iron and steel for wood in the various manufactures and for building purposes, has made it possible for the present supply of timber to be sufficient for all purposes, for many generations to come. The extensive use of both bituminous and anthracite coal for heating and cooking purposes, in both city and country, preserves each year millions of valuable trees from the woodman's ax, and millions of acres of once tilled, but now impoverished land, have been allowed to grow up to bushes and trees, that in some cases are already yielding a supply of valuable timber. The advisability of setting out forest trees on tillable and fertile land, in a section where there are many natural growth forests still left, is a question hard to answer. If the land is adapted to the rapid growing of walnut trees, or any other variety whose timber has a ready market, then the venture might prove a success. In

no case attempt, on an extensive scale, the growing of trees that are not natives, or adapted to your section, for, under the most favorable circumstances, the outlay for labor will exceed even your conservative calculation. In most cases, the coming generations will reap the greatest benefit, yet a tract of land on which a grove of walnut, or other valuable trees are growing, will command a better price than treeless adjoining plats.

Raspberry and Currant Borers.—J. L. Thompson, Abendacino Co., Cal.: The raspberry root-borer so destructive to your plants is probably a local insect, not known to infest plants on the Atlantic. You describe it as a white worm, one-half to three-quarters of an inch long, entering the roots in July, eating its way along them until reaching of the ground, then leaving the root, passing into the chrysalis stage, remaining in this until the following spring. We do not recognize the insect from your description, but would be pleased to receive specimens of the chrysalides, and as many as you may feel inclined to send. The currant borer to which you refer is probably the same as we have here, and the only way to check it is to examine the plants in the fall or early spring, and cut out and burn every infested cane. The canes containing worms or borers can usually be determined by their shrunken appearance or by slightly bending them with the hand in passing along among the plants.

Repairing Farm Implements.—S. G. Goodwin, Ulster Co., N. Y.: It does not pay to discard an implement just as soon as it begins to have an occasional breakage. If not fully worn out, it will be money and time well invested to carefully look over all implements, months before they are to be used, and order repairs wherever they are needed. Should any portion show a flaw, or great wear, needing only an unfavorable strain to break it, do not wait until the crash actually occurs, but obtain the needed portion at once, and, if the part to be used is located where its breaking will cause injury to other portions, or can be attached only after considerable trouble, then repair before it is again called into active service. You will thus save many hours of valuable time during the busy season. By having a few tools, any farmer can repair most of the damaged or wornout woodwork of farm implements.

Wintering Other Stock With Sheep.—J. L. Porter, Lycoming Co., Penn.: While cattle and horses are sometimes allowed to run together in the yard, during the winter season, it is a practice fraught with much danger of injury, especially if the cattle be inclined to hook, or the horses are of a spirited nature. In no case should cattle or horses be allowed to run with sheep, or room with them, as the coating of wool makes a favorable substance for the horns to penetrate and cling to while the cattle toss the sheep about, either viciously or during a playful mood. Some farmers may, and do, plead lack of room for wintering different kinds of stock in the same yard, but it is not a worthy excuse, for any farmer who has a variety of stock, and the fodder to winter them, should have at command, or be able to obtain, the material to build a separate shelter and division fences. Often there is enough shelter, but a lack of division fences, or partitions.

Litter for Cows in the Winter.—J. Campbell, Johnson Co., Ind.: Hard-wood sawdust is the finest litter for cows that are milked in the winter. It is loose, dry, absorbent, clean, and free from any undesirable smell of decaying matter. Farmers near a sawmill can almost always get a supply for the taking of it, and a chance of this kind is not to be missed. The stalls should be cleaned twice a day, the soiled litter drawn into the gutter to absorb the liquid, and the floor well sprinkled with plaster. This kills all odor, and a little fresh sawdust makes everything sweet.

The Roadside.—John C. Hosmer, Jackson Co., N. C.: The roadsides are too often neglected, and allowed to grow up to bushes and foul weeds. There is no other labor that will add more to the tidiness and value of the land. Most of the pernicious weeds first find a lodgment along the roadside, and by neglect are allowed to ripen their seed, multiply, and in a year or two they are found established upon the cultivated land. It may, possibly, require the work of one man for a day, or even more, each year, to cut down the weeds and bushes along the roadside, but it will prove a valuable investment, and if a little care is exercised, the surface may be put in a proper condition to mow the grass along the roadside with a machine, the work being then quickly done. The yield of hay more than pays for the trouble.

Clean the Barnyard.—H. L. Homer, Wayne Co., Ky.: For the production of farm crops, barnyard manure is the most complete fertilizer obtainable, and for cheapness and availability for the general farmer is a source of prosperity in all sections where land has been under cultivation for a term of years. Very often the winter's accumulation of manure lies thinly scattered over the barnyard until late in the summer, when simply the thickest portion is secured, while the finer parts, that cannot be thrown on the wagon with a fork, are left to be destroyed by the rains and action of the sun's rays. A good two-horse wagon load of the fine manure, on any land of moderate fertility, will give its cost in increased crops in the two or three years that its action may be plainly observed. If for any cause one is unable to haul the manure as fast as made, it should be piled in long rows, making the sides as perpendicular as possible, and when hauled, a few months later, it will be found in an advanced stage of decomposition, requiring less time to haul to the field, and in better condition for the purpose intended.

Highway Fences.—P. R. Castley, Scott Co., Ky.: In some States there is no compulsory law regarding the maintenance of a fence along the highway. This not only saves the farmer an often needless expense, but allows each farmer to secure the grass growing in the highway along his own land. Dispensing with these fences also makes the pasturing of highways impracticable, and saves many a neighborhood quarrel, as there is a class in every community who consider that which grows along the highway the property of any one who desires to secure it. The almost universal practice of discarding fences in front of private residences, in villages and small country towns, has materially lessened the expense of keeping up that class of property, besides adding very much to the beauty of the surroundings, as, under the old custom, there were scarcely two fences alike along the street in half a mile drive; and when the material, width and character of sidewalks are placed under the control of the street commissioners, or other municipal officers, much good will result, uniformity be maintained, and walking made more popular and enjoyable.

Wholesome Food.—J. Binns, Ocala Co., Fla.: Food should be wholesome. Unhealthy food should no more be fed to an animal than to a man. Of course, its nature is coarser and its requirements different; but, allowing for these, we should be just as careful what we feed our domestic animals as what we use ourselves. Especially so with milch cows, which supply milk and butter for the table, or for market. Milk is affected by what the cow feeds upon. Certain kinds of food yield sweet, palatable milk and butter, while there are other kinds that render them distasteful, or even offensive. But the most intelligent farmer will not stop here; he will see that all his animals have their suitable and proper rations. Every man who owns a good driving horse, and is proud of him, will look after his food and feeding, and provide what will contribute to his muscle, speed and endurance. And the good housekeeper will see that the meat for the family is not corrupted or rendered less wholesome by feeding the swine swill, or rotten grain.

Shelter for Stock.—U. D. Fulton, Kent Co., Del., writes us: "Let no farmer or stock raiser forget that there is profit, as well as kindness, in providing suitable shelter for his animals. Every animal that is worth keeping on the farm, from the thoroughbred horse down to the bantam chicken, should be protected from the inclemency of the weather. It is humane, it is profitable to do so. It is a pitiful sight to see a poor horse or cow shivering in a cold rain, or trying in vain to find a covering from the pelting sleet, and we always pity the farmer who permits it, and hope that he will learn better. Does he not know that he is sinning against his pocket as well as his conscience, if he has any, in suffering his dumb brute to be so exposed? Even if it does not sicken and die, as it often does, it will certainly lose much of its vigor and vitality, and it will take more grain and more care to preserve it, and then it will not look as well, or sell for as much, as if it had received the attention it needed."

Care of Young Turkeys.—A. Marion, Queens Co., N. Y.: A young turkey will, one year with another, bring a large profit after paying for food consumed, and there is more certainty of a good price than on any other farm product. Almost any farmer can raise from twenty to fifty every year. Turkeys are roving in their dispositions, and do not stay around the house, as do ducks, geese and other poultry, although those reared with hens are more inclined to do so. The best place to keep the young ones at night, if with a hen, is in a large box, with a door at the front, which drops down for a feeding platform. Cover the bottom with some cut hay or straw, and fasten them in at night. A dry-goods box is just the thing; roomy enough for them, so that if the early morning is wet or cold, they may be left inside the box. Sometimes, in inclement weather, leave them there all day. Two hens, if they agree, may have their broods together, and thus save extra boxes.

Worthless Turnip Seed.—E. S. Todd, Essex Co., N. J., writes us: "Some years ago a few turnips, which had been allowed to remain all winter where they grew, sent up such thrifty seed stalks that they were allowed to grow and go to seed. The next season that seed which was plump and bright was planted and, to my surprise, the crop consisted of nothing but a luxuriant growth of leaves. Intelligent tillers of the soil assured me that when turnips are allowed to remain in the ground where they grew, during the winter, if allowed to produce seed the crop will be nothing but leaves. The seed appeared all right, and every kernel germinated readily. There was a bountiful crop of leaves, but the turnips consisted of nothing but large stems. Not a single plant developed a turnip. The most worthless turnips withstood the winter and bore the plumpest seed."

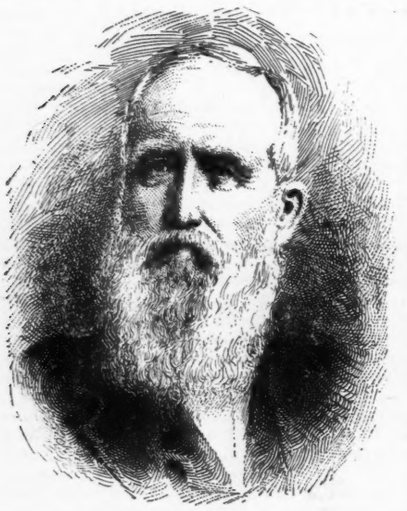
Roofing.—J. L. Peterson, Ogle Co., Ill.: When properly applied, the most durable material for roofing is slate; but the first cost is greater and, owing to its great weight, the building frame needs to be more substantial, to prevent sagging. An expert is required to apply the slate, yet for roofs of a third pitch, or more, slate should be used if possible. For a flat roof, tin or iron should be used, but it needs to be kept painted to prevent rusting. Where air has free circulation underneath it will rust from below, and to guard against this very trouble, the iron roofing is painted on both sides. Cedar and split or handmade pine shingles will last forty years on a quarter-pitch roof, and for sheeting there is nothing better than three-inch strips, laid three inches apart, when the shingles are laid six inches to the weather. This allows the shingles to quickly dry after a shower, and the sooner the moisture is evaporated the longer any roof will last. The usefulness of an old roof may be prolonged many years by the application of prepared roofing paint. The tarred and other prepared paper roofing lasts well, and a workman can place it in position. If not practicable to wholly renew leaky roofs, they should be patched up as often as necessary. It hardly pays to cover a roof with cull or cheap shingles. It takes much longer to lay them, and they are very soon decaying here and there.

Muck as a Fertilizer.—J. Scott, Essex Co., N. J.: Many farmers have an unsuspected mine of wealth in an ill-looking swamp, which they despise as so much waste land. Every ton of the muck may have five dollars' worth of nitrogen in it, and it will rarely have less than one dollar's worth. An acre will have about two thousand tons in it if the muck is three feet deep. When the muck is dug out the land is there still, and, being drained, will, under proper cultivation, make the richest grass meadow, good for two tons of hay to the acre. Or, it may be ditched and planted with water cress; or willows, which give a profit of several times as much as the grass. Or, if there is abundance of water in the bottom, it will make a pond valuable for ice. If a pond is made of it, it will only go back to its first condition, for every swamp has once been a pond filled up by aquatic vegetation, and it may easily be that under it is a valuable body of marl, which is worth much money as a fertilizer. It will pay the owner of any swamp to take what Nature has given to him.

TOPICS OF THE TIMES.

The Rothamsted Jubilee.

A large body of representative agriculturists assembled at Rothamsted, England, on July 29th, to do honor to Sir John Bennett Lawes and Dr. Joseph H. Gilbert, on the completion of their fifty years joint work in experimental agriculture. The experiments were commenced in 1843, and during the whole of this period Dr. Gilbert has been associated with Sir John B. Lawes in the work of experimental research. The Rothamsted experiments have been entirely disconnected from any external organization, and have been



SIR J. B. LAWES.

maintained at the sole cost of Sir John B. Lawes. For the continuance of the investigations after his death, Sir John has recently made the munificent endowment of $500,000, besides the famous laboratory and certain areas of land. The memorial is a massive granite boulder weighing upward of eight tons, appropriately inscribed. The presentation included a three-quarter-length portrait of Sir John and a massive silver salver to Dr. Gilbert. The foremost agricultural members of England were present, and many eloquent speeches were made telling of the immense amount of good the Rothamsted experiments have done. Sir John and Dr. Gilbert in reply, told of their earlier experiences in starting the work, and the difficulties under which they both labored.

Personally, Sir John is a genial gentleman with the cordial and hearty characteristics of the typical educated Englishman. He is a foe to sham, pretence and humbug, and probably regards his knighthood more as an act of appreciation for his services than for the title. He is very liberal in his political ideas and progressive in affairs pertaining to the welfare of the common people. For instance, he does not favor the maintenance of the House of Lords.

A Change in Our Foreign Trade.

The tariff war between Germany and Russia is likely to have a large effect on the export trade in produce of the United States. On August 1st both Germany and Russia increased by fifty per cent. the duties on imports from one country to the other. Russia imports manufactured goods mainly from Germany, but Germany's imports from Russia are very largely raw stuffs and agricultural produce. In 1892, Russia sold to Germany rye valued at $21,500,000, yet that was agriculturally a fair average season in Germany.

Consul-General Mason says that this year the deficit in the German home crop of rye is greater than last season, and the demand will be proportionately increased. "Rye is a cereal which it is always difficult for German importers to find in large quantities elsewhere than in Russia, so that it may be safely estimated that every bushel of rye that the United States can spare from now until next July will find a ready market in Germany." There is no doubt about this, as Germany bought nearly four million bushels of American rye in the fiscal year ended June 30, 1892, or nearly one-third of the rye exports from the United States that year, when we shipped breadstuffs so largely to make up the deficit in European crops of the previous year. Aside from these extraordinarily large purchases of Russian rye, German imports from that country, in 1892, did not differ essentially from the previous year, when she bought Russian cereals to the value of nearly ninety million dollars, hides and skins worth seven million dollars, animal products of a somewhat greater value, and cattle and horses to the amount of more than five millions of dollars.

The ordinary German import duty on rye and wheat is equal to 32 cents per bushel of 60 pounds. Add to this the retaliatory increase of 50 per cent., and the present German duty against Russian grain is 48 cents per bushel, a difference of 16 cents in favor of the United States, India, and such other nations as have a surplus of rye and wheat to sell. Of course, Germany will not pay 16 cents a bushel extra for Russian wheat if she can get American grain for the same or a less figure. Hence, it is quite likely that Germany will buy from us not only more rye than in the fiscal year 1892, but more wheat. The United States exported nearly eight million bushels of wheat to Germany in that season, of an average value of one dollar per bushel. On the other hand, the cereals which are kept out of Germany by this increased tariff will, in some measure, find a market in Holland, Belgium, France and England. Thus, while the competition of Russian grain will by no means be done away with, it will be so hindered as to very materially benefit American export trade if proper efforts are made to push American wheat, rye and corn in German markets.

The United States consul at Chemnitz, writing of the great drouth and the slaughter of neat cattle, says that fully one-half of the stock in many districts will have to be killed this fall or winter, in order to save the other half. Hence, prices of meats will for a time be cheap, but as the source of supply grows smaller, meat must be dearer. He thinks there is no good reason why American meats would not find big and ready sales in Germany, where wholesale prices are from 10 to 14 cents per pound for steer beef, 10 to 12 cents for veal, 9 to 12 for cow beef, 8 to 11 for bull beef, and about 12 to 13 cents per pound for live swine.

Convention of Agricultural Colleges and Stations.—The seventh annual convention of the Association of American Agricultural Colleges and Experiment Stations will be held at the Columbian Exposition, Chicago, beginning Tuesday, October 17th. Delegates will be present from each of the agricultural colleges and stations in the United States and Canada. Many other prominent agriculturists will attend. The importance of this meeting is shown by the appropriations made to each of these useful institutions by the government. The experiment stations alone receive $728,000 annually, the sugar experiments have $50,000, the work with grasses and insects has $20,000, or a total expenditure of nearly $800,000 by the United States Department of Agriculture. This sum is increased to a million dollars by the private and State contributions annually devoted to the scientific solution of farm problems. The workers, actively employed in carrying on the experiments, number five hundred persons. There are seventy-one directors, one hundred and twenty chemists, forty-seven agriculturists, fifty horticulturists, thirty botanists, thirty-six entomologists, twenty-two veterinarians, fourteen meteorologists, and several biologists and miscellaneous workers. The bulletins issued by the stations are distributed through mailing lists, which aggregate 380,000 names. The information on agricultural subjects, printed and distributed annually, has forty million pages devoted to its dissemination.

The Bounty on Sugar.—During the last fiscal year the United States paid $8,763,830 to 635 persons, as the bounty on cane sugar, mainly in Louisiana. Six persons in California, Nebraska and Utah received $531,363, as bounty on beet sugar. Sorghum sugar in Kansas and Minnesota brought $19,817 to three persons. The bounty paid on maple sugar was $60,119 to 2,817 persons, in Vermont, New York, Pennsylvania, Ohio, Maryland and other States. The bounty has caused a great increase in the production of cane sugar in Louisiana, and the quality is greatly improved, owing to the establishment of larger and more central factories. In 1886 there were 1,274 sugar houses in that State, but last year these had been concentrated into 572, and this year to 518. The average production per sugar house was 315 tons in 1892, and 436 tons in 1893, though twenty-three of the houses still use only horse power. Those using steam power produced an average of nearly 500 tons of sugar. Though one-fourth more sugar was made this year, 165 houses evaporated in open kettles, 170 in open pans, and 183 houses in vacuum pans. The latter manufactured four-fifths of all the cane sugar, with a yield of 150 pounds sugar to the ton of cane, while the other methods yield only 111 pounds. The old processes not only make 700 pounds less sugar per acre, but they leave 61 gallons of molasses to the 1,000 pounds of sugar, instead of 30 gallons by the centrifugal and vacuum-pan process. It is estimated that an acre of land will yield 2,718 pounds of sugar, or a gross return of $90. The same tendency which is seen in the wheat industry, toward large central mills, is in the sugar industry, founding large central factories.

World-Wide Use of American Farm Implements.—There is a steady increase in the number of agricultural implements of American manufacture which are sold to foreign countries. The increase in value of these shipments is about one million dollars per year, and occurs in the exports to Great Britain, Germany, and all other European countries except France, as well as to the South and Central American nations, the West Indies and Southern Africa. The manufacturers of England and Germany are seriously feeling the competition of the American makers, as the American machines are lighter, simpler, and more convenient than any of the others, while the cost for repairs is less and the draft much easier. American horserakes are neater and less clumsy. The American plow excels those of other countries in lightness of the implement and in durability of the shares and points. The English makers lack the skill to properly chill the points and other wearing parts, their process leaving the metal extremely brittle, while the American process makes the iron tough as well as hard, and at the same time susceptible of a high polish. The English plow makes a pretty furrow, but does not loosen the soil, pressing and packing it so that much harrowing is needed. Iron-beamed plows are most popular in foreign countries, and all vehicles must be so constructed that they can be turned in a small area or on a narrow road. The growing demand in other lands for the products of American skill and intelligent industry is very gratifying.

Increasing the Wheat Yield.—The statistics of yields of wheat in the United States are very incomplete, but so far as obtainable, they point toward diminishing returns. Some of the older agricultural reports of Illinois and Ohio, show this when compared with the later ones. Because of reduced yields and an increased tendency to disease, wheat in Wisconsin, Illinois and Iowa has been largely supplanted by other crops. Fifteen years ago, when the journals were full of articles on the bonanza farms of the Northwest, and the extinction of the small farmer was considered certain, the average yield for the Dakotas was reported much larger than now. Some of the Eastern States give larger yields of wheat to the acre than the Western States. The wheat area in the East is small, well tilled, and probably exceptionally fertile, because near the many large towns and cities there is a much larger supply of stable manure than there is on the prairies. It is estimated that a gradual advance of five per cent. in the annual average price of wheat in Chicago would cause an increase of nearly one-fifth or three bushels in the yield of wheat per acre in the Mississippi Valley. It is also judged that if the price of wheat were to advance permanently to $1 per bushel, the present total annual production would be increased by more than one-half. That the soil could do this is shown by the experiments with seeds, soils and fertilizers which Sir John B. Lawes has been carrying on for 60 years at Rothamsted. One of his experiment fields, which has borne wheat every year for 50 years without fertilizing and without interruption, is now yielding more wheat per acre than the average for the United States, or the average for the whole world. Better culture is what is needed.

Worth Ten Times the Price.—I cannot get along without so valuable a paper as the AMERICAN AGRICULTURIST. The information I obtain from it is worth ten times the price of the subscription. WM. NORVAL, Sherburne Co., Minn.

Macbeth's "pearl top" and "pearl glass" lamp-chimneys do not break from heat, not one in a hundred.

They are made of tough clear glass, clear as crystal.

They fit the lamps they are made for. Shape controls the draft. Draft contributes to proper combustion; that makes light; they improve the light of a lamp.

Pittsburgh. GEO. A. MACBETH CO.

SOFT Leather has Vacuum Leather Oil in it; 25c, and your money back if you want it.

Patent lambskin-with-wool-on swob and book—How to Take Care of Leather—both free at the store.

Vacuum Oil Company, Rochester, N. Y.

CORNELL UNIVERSITY.

FOUR COURSES IN AGRICULTURE:
Regular, Special, Dairy and Short Winter. Terms begin September 25, 1893, and January 3, 1894. For particulars address
I. P. ROBERTS, Director, ITHACA, N. Y.

HEEBNERS' —PATENT— Level Tread HORSE POWER
With SPEED REGULATOR.
For 1, 2 and 3 Horses.

Send for Catalogue

Ensilage and Dry Fodder Cutter with Crusher. Also Threshers and Cleaners, Feed Mills, Corn Shellers, Drag & Circular Saw Machines, etc.
HEEBNER & SONS, Lansdale, Pa., U. S. A.

EVAPORATING FRUIT
Full treatise on improved methods, yields, profits and prices Free. AMERICAN MFG. CO.
Box 18. WAYNESBORO, PA.

Fresh Air and Exercise.

Get all that's possible of both, if in need of flesh strength and nerve force. There's need, too, of plenty of fat-food.

Scott's Emulsion

of Cod Liver Oil builds up flesh and strength quicker than any other preparation known to science.

Scott's Emulsion is constantly effecting Cure of Consumption, Bronchitis and kindred diseases where other methods FAIL.

Prepared by Scott & Bowne, N. Y. All druggists.

Nervous Irritability.

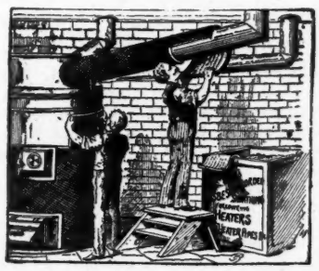
Nervous disorders are increasingly common. Many of them are directly traceable to well-recognized physical causes. The system is overloaded or overstrained, the nerves of some organ refuse to act, and all sorts of disorders result.

What is needed is something to soothe the parts affected. For this **Allcock's Porous Plasters** are invaluable. Without being in any sense an anodyne, they have a wonderful power to alleviate irritation of all kinds.

Acting primarily upon the skin and muscles for the relief of strains, sprains, lameness of all kinds, **Allcock's Porous Plasters** affect also internal organs, curing indigestion and dyspepsia.

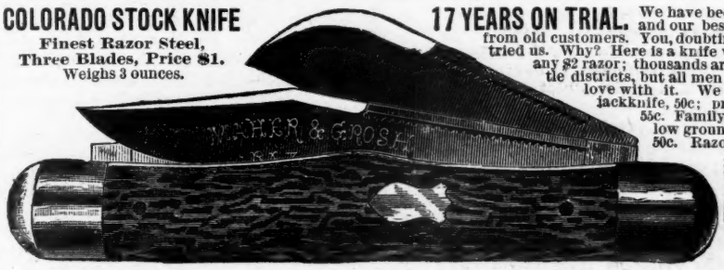
Most of the nervous twitchings of the skin may be entirely overcome by application of

Allcock's Porous Plasters



H. W. JOHNS'
ASBESTOS
FIRE-PROOF, NON-CONDUCTING
COVERINGS.
FOR FURNACES, HOT-AIR PIPES, ETC.
33 PER CENT. OF FUEL SAVED.
DESCRIPTIVE PRICE LIST, FREE BY MAIL.
H. W. JOHNS MANUFACTURING CO.,
SOLE MANUFACTURERS.
ASBESTOS ROOFING, BUILDING FELT, ETC.
SECTIONAL PIPE & BOILER COVERINGS, STEAM PACKINGS, ETC.
LIQUID PAINTS, FIRE-PROOF PAINTS, COATINGS, ETC.
87 MAIDEN LANE, NEW YORK.
CHICAGO. PHILADELPHIA. LONDON

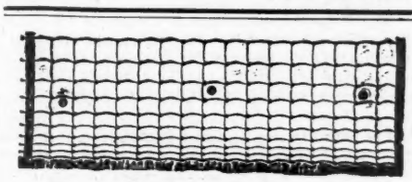
COLORADO STOCK KNIFE
Finest Razor Steel,
Three Blades, Price $1.
Weighs 3 ounces.



17 YEARS ON TRIAL. We have been before the public, and our best trade now comes from old customers. You, doubting Thomas, have not tried us. Why? Here is a knife with blades equal to any $2 razor; thousands are in use in the cattle districts, but all men who whittle fall in love with it. We have good 2-blade jackknife, 50c; pruning, 75c; budding, 55c. Family shears 8-in. 75c; hollow ground razor, $1.25; strop, 50c. Razors reground, 50c. Illustrated 80-page list free, also "How to Use a Razor."

Maher & Grosh,
633 A St.,
Toledo, Ohio.

CHICAGO VETERINARY COLLEGE.
FOUNDED 1883.
The most successful college on this continent. For further particulars address the Secretary,
JOS. HUGHES, M. R. C. V. S., 2537-2539 State St.- Chicago, Ill.



Pardonable Pride.

That which a good farmer can take in having the best fenced farm in the country. His city brother with the best dressed wife, or fastest horse, must continually add to his investment, while he with his Page fence properly put up can safely "rest on his laurels."

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.
PAGE WIRE FENCE CO. of Ontario, L'td.
Walkerville, Ont.

Burr-Stone Grinding Mills

See these mills running at World's Columbian Exposition, Agricultural Hall, Columbian Ex. Machinery Hall.

We offer you the best mill on the market at such a low figure it will pay you to write to us. They are the best constructed, least complicated and fastest grinding mills yet produced.
SATISFACTION GUARANTEED.
Send 2ct. stamp for our 48-page Illustrated Catalogue.
LEONARD D. HARRISON,
Box C NEW HAVEN, CONN.

Agts. Wanted.

BICYCLES ON EASY PAYMENTS.
New or 2d hand; lowest prices, largest stock; makers & oldest dealers in U.S. We sell everywhere. *Cata. free.*
ROUSE, HAZARD & CO. 936 St., Peoria, Ill.

THE CROPS OF THE YEAR.

A Small Cotton Crop.

The September Report of the United States Department of Agriculture makes the average condition of cotton, on September 1st, as only 73.4, on the basis of 100 as a full stand. This is the lowest September condition since 1881, which stood at 70, and resulted in a crop of 6,605,000 bales on 16,851,000 acres. September condition last year was 76.8, and the crop is now finally reported to have been 6,717,000 bales on 18,362,000 acres. In September two years ago, condition was only 83, and the crop exceeded nine million bales, but the breadth devoted to the plant was a million acres larger than during the present season.

The Product of 1893.—With such unfavorable conditions, the August indication of a possible 7,500,000 bales must be very materially reduced, the estimates being from six to seven million bales. Our judgment inclines to the view that September and October must prove very favorable to make a crop exceeding the comparatively small yield of last year. But how difficult it is to form the usual opinion as to the probable crop may be inferred by comparing the September returns with those for August (see Page 532), and noting the Department comments:

Conditions Affecting Yield.—In addition to unfavorable weather conditions, among which the drouth has been prominent, the correspondents of the Department ascribe the falling off in the condition of the crop to the ravages of insect enemies of the plant, such as the caterpillar, and the boll, army, and leaf worms. Rust, as a cause of damage, is also extensively noted. The hurricane of August 28th caused much damage to the crop in North Carolina, South Carolina, Georgia, and, in less degree, in the State of Florida. Reports from Alabama show an excess of moisture in some parts of the State. In some places the plant is taking on a second growth, which is not considered beneficial, and in others there is sprouting and rotting in the bolls. Seven counties of the State report too rapid opening, eighteen that the plant is shedding badly, and forty-eight report rust. The correspondents' reports from Mississippi are to the effect that the crop is doing finely, and the weather is favorable for the present condition. In Louisiana, excessive rains early in August caused old cotton to shed badly, while young cotton was not benefited, as the growth was in the weed instead of the fruit. With the exception of the counties of Sebastian and Scott the reports from Arkansas show the crop to be below an average. In Texas, the plant is small everywhere, both early and late planting. The State averages of September condition are: Virginia, 93; North Carolina, 76; South Carolina, 63; Georgia, 77; Florida, 85; Alabama, 78; Mississippi, 78; Louisiana, 81; Texas, 63; Arkansas, 80; Tennessee, 66.

Another Reason for a Small Crop.—Besides these unfavorable conditions, an overlooked cause of a reduced yield is emphasized by Mr. W. E. Collins, who writes us from Mayersville, Miss.: "The present crop will be a small one, a result of financial stringency more than any reduction in acreage. The acreage planted furnishes incomplete indication of what the crop will be. The planter puts in every acre of his land in cotton, without regard to the means in hand to finish the crop. He thinks later on he will be able to borrow money to complete the job. This he has not succeeded in doing, and instead of dropping all of the land beyond his means to cultivate, he held on, spreading the little over the whole. The seasons have been adverse; the year has been one of severe storms and variable weather. The rains have ruined the crop in one section and drouth in another. The crop is spotted; that is, good in spots, the bad predominating. All reports indicate a crop no greater than last year."

The Outlook for Prices was extremely dubious in August, owing to the financial stringency which compelled mills to shut down. The world's visible supply of cotton on Sept. 1st, the amount of the new crop for that year in the United States (the total of these two items indicating roughly the supply available for consumption for the ensuing twelve months, exclusive of invisible supplies of old and of the new crop in India and Egypt), and the price per pound at New York and Liverpool on Sept. 8 thus compare:

[In thousands of bales, 000's omitted.]

	1893.	1892.	1891.	1890.	1889.
Visible supply.....	2,227	2,610	1,662	1,077	841
New crop, U. S.	6,500	6,717	9,030	8,655	7,314
Total.....	8,727	9,328	10,693	9,733	8,155
New York price.....	8c	7 5/8c	8 3/8c	10 11/16c	11 3/8c
Liverpool.....	4 1/4d	4d	4 3/4d	5 11/16d	6 1/16d

If the new crop only makes 6,500,000 bales, it with the world's visible supply will afford a smaller quantity of cotton available for consumption during the ensuing twelve months than at any like date since September, 1889. Should our new crop be only some six million bales, the supply from these sources would be just about as much as four years ago, when prices were almost fifty per cent. higher than at present. The Egyptian and Indian crop has not increased during these five years enough to materially affect results, and at best constitutes less than one-fourth of the World's production, the United States furnishing 76 to 78 per cent. of the total supply. The world's consumption was less than usual last year, but was about half a million bales greater than the average for the six years prior to 1890. If consumption for the ensuing twelve months is no more than for the past year, when it was restricted by the great strike in England, the world's surplus of old cotton a year hence should be reduced to about half the present supply. In other words, manufacturing must suffer extraordinary depression not to consume the reduced product of 1893 and nearly half of the present surplus.

Instead of lower prices, is it not rather a question of how great the improvement will be, and to what extent improvement will be retarded by the money market and by the condition of the manufacturing industry.

A Heavy Reduction in Wheat.

The Condition, when Harvested, of the wheat crop, considering both winter and spring varieties, was 74 against 85.3 in 1892, according to the government report. The general average is the lowest since 1885, when it was 72, the crop that year being 357 million bushels, on an acreage but little, if any, less than the breadth devoted to this great staple during the season now closed.

A Still Better Idea of the great shrinkage in this crop may be had by comparing the State averages this year with last: New York's wheat crop was harvested with condition reported at 76, or 9 points less than the '92 crop; Pennsylvania 90, or 3 better; Nebraska only 55, against 88 last year; Minnesota 65 vs. 79; Michigan 80, one point better than last year; Ohio returns 98, against 81 last season, but such improvement does not seem possible; Indiana 88 vs. 83; but Illinois' average is only 60, or 19 points less; Kansas is worst of all, 42, against 93 last year, and her State Board of Agriculture reduces her crop to 19 million, compared to over 70 million bushels last year; Missouri 64 vs. 85. The Northwest sends conflicting reports; Minnesota's government returns being 65, against 79 last year; South Dakota 66 vs. 83; and North Dakota 67 vs. 77 last year, indicating a crop for the three States of 87 million bushels, against 107 million last season; while commercial reports claim a much larger product. The Pacific States come in 5 points better than last season, with a crop of nearly 74 million, compared to less than 60 million bushels.

The Nine Surplus States evidently have only about 250 million bushels this season, or some 80 million bushels less than their '92 crop. This estimate offsets the claimed increase in the Northwest against the Kansas shortage, and points to a total crop of 420 million bushels, but others interpret the same data to mean as low as 375 million.

Quality of the Crop.—In the New England, Eastern, and most of the Southern States, the crop was harvested in good condition, and the yield averaged well. The same can be said of Ohio. In Indiana the quality is good but crop light, while in Illinois, Missouri, Kansas and Nebraska the yield is small and of an inferior quality, much of it grading at No. 3 and under, and in some places is reported to be worthless. In the Dakotas the yield is light, while the quality is generally good. In Iowa and Wisconsin the winter variety yielded well and was of good quality, while the spring variety yield was poor and of an inferior quality. In Minnesota the yield was poor and not up to expectation, the quality generally good, with some complaint of shriveled grain. In California and Oregon the quality of the grain is good, up to an average, and the yield has been good, except on lowlands, where it was greatly damaged.

Exports Continue Heavy, averaging nearly five million bushels weekly, and in July are officially reported to have been 18,800,000 bushels, or 5,000,000 more than in July, '92. In the seven months ended August 1, exports are officially stated at 103,754,000 bushels, compared to 110,218,000 in the like seven months of last season following the European famine of 1891. This movement and the advancing market as we go to press, confirm the indications of a world's shortage this season that were discussed in our last number.

The Problem of Corn.

The Smallest Crop in years is indicated by the September report of the statistician of the Department of Agriculture. It shows a decline in the condition of corn to 76.7, from 87.0 in the month of August, and 93.2 in July, being a decline of a little over ten points from the August, and over sixteen from the July report. The change is marked in nearly all of the surplus corn States.

In comparison with the September reports of the past ten years, only three were lower; 70.1 in 1890, 72.3 in 1887, and 76.6 in 1886. In the same month in 1892 the condition was 79.6, or nearly three points higher than the present month. There has been general decline in the condition throughout the country, which has been caused by the widely prevailing drouth.

The Prediction of the American Agriculturist on Page 534, regarding a "crop hardly exceeding 1,600,000 bushels, that may even drop to the size of the 1890 crop," is apparently more than fulfilled. For the present condition is only 75 in Kentucky, 64 in Ohio, 65 in Michigan, 59 in Indiana, 64 in Illinois, 96 in Iowa, 92 in Missouri, 73 in Kansas, and 71 in Nebraska. Omitting Michigan and Kentucky, these seven corn surplus States now promise only 877 million bushels, a reduction of 268 million bushels from the appearances the latter part of July. The total crop of the United States possibly may not exceed 1,450 to 1,500 million bushels.

Other Staple Crops.

Oats and Small Grains.—There has been a further decline in the condition of oats during the past month, the general average standing at 74.9 against 78.3 in August, which means a crop of about 600,000,000 bushels. In September, 1892, it was 78.9. The condition of rye is 82.0. Drouth during the spring and early summer injured the crop. Barley shows a slight falling off since last month, the general average being 83.8 against 84.6 in August.

Condition of Tobacco on September first is less favorable than those for August, standing at 72.3. The range is from 54 in Ohio to 100 in Florida. Some localities report damage by the tobacco worm, but the general cause of the low condition is the long-continued drouth which has prevailed over an unusually large tract of country. Although rains have at last broken the dry spell, they have generally arrived too late to be of material benefit to the tobacco crop. The cigar-leaf crop is short and the late fields were badly wind-whipped; quality quite uneven, causing an advancing market for '92 wrappers, but bales of the '93 crop are unsettled pending the tariff revision. The heavy leaf States are looking toward higher prices for the new crop.

Potatoes Were Reduced in condition three points during August and may not turn out much worse than last year's extraordinarily small crop. Otherwise, the outlook for potatoes remains as noted on Page 536.

A Big Cranberry Crop is assured. The American Cranberry Growers Association estimates it as fully 650,000 bushels, or from 50,000 to 75,000 bushels more than last year. The top prices at Boston and New York on September 15, were $5.50 to $6 per barrel for choice dark Cape Cod berries.

The Yield of Onions is very light this season in the West and Northwest, including the plantations about Chicago, but in Northern Ohio the

(*Continued on Page* 585.)

To the Right Spot

Dexter Curtis.

Every dose seemed to go, when I began to take Hood's Sarsaparilla. I had a bad cough for nearly two years, coming on after the grip. I tried physicians, went twice to the Hot Springs of Arkansas, but all did no good. I got a bottle of **Hood's Sarsaparilla** and it gave me relief at once. I took six bottles and know I am much better every way." DEXTER CURTIS, Madison, Wis. Get Hood's, because

Hood's Sarsaparilla Cures

Hood's Pills cure all Liver Ills. 25c.

TO TAKE PLACE OF WIND MILLS

HOT AIR PUMPING ENGINES

A Windmill

Is unreliable because it depends upon the elements for its power; hydraulic rams also depend upon favorable conditions and waste as much water as they secure. Steam pumps require skill and hand pumps demand labor and time. The

DE LAMATER-RIDER OR DE LAMATER-ERICSSON Hot-Air Pumping Engines

are especially designed for pumping water, and from shallow streams or any kind of well. They are simple, safe and reliable, require no steam and have no valves. They require very little heat to operate them, and can be arranged for any kind of fuel.

Send for illustrated catalogue to

THE DE LAMATER IRON WORKS,
87 South Fifth Ave.
NEW YORK, N. Y.

GRINDING MILLS

FLOUR MILLS built by contract Roller System.
French Buhr Stone Portable Mills for **Farmers**, 28 sizes and styles.
COMPLETE MILL and SHELLER.
A boy can grind and keep in order. Adapted to any kind of power. **Complete Flouring and Corn Mills**; also for hominy and pearl meal, all sizes. Second hand mills of other makes on hand. Send for Book and how to grind. Address
NORDYKE & MARMON CO.,
15 York St., Indianapolis, Ind.

ICE PLOWS

$16.50. Circulars Free. **H. PRAY,** Clove, N. Y.

Health! Can you buy it? Yes, when it is possible with a single box of

Beecham's Pills

WORTH A GUINEA A BOX.

(Tasteless)

to cure Indigestion Biliousness and Sick-headache.

25 cents a box.

34

ALLIANCE CARRIAGE CO., CINCINNATI, OHIO.

You should order no BUGGIES, CARRIAGES, WAGONS or HARNESS from any one until you have seen our New Grand Catalogue for 1893, which is mailed free to any address. It shows over one hundred new styles, with prices of vehicles ranging from $30 upward, and Harness from $5 upward. Our goods are strictly hand-made and fully warranted for two years, and our Spiral Springs are warranted for 12 years. We are recognized manufacturers for the above organizations. Examine our mammoth display at the World's Fair, in Chicago. The only manufacturers in the world that sell their entire output direct to the consumer.

ALLIANCE CARRIAGE CO. Factory and Salesrooms: Sycamore St. from Court to Canal Sts. **Cincinnati, O.**

WEBSTER'S INTERNATIONAL DICTIONARY

Entirely New. Abreast of the Times. A Grand Educator.

Successor of the "Unabridged."

Ten years spent in revising, 100 editors employed, and more than $300,000 expended.

Everybody should own this Dictionary. It answers all questions concerning the history, spelling, pronunciation, and meaning of words.

A Library in Itself. It also gives the often desired information concerning eminent persons; facts concerning the countries, cities, towns, and natural features of the globe; particulars concerning noted fictitious persons and places; translation of foreign quotations, words, and proverbs; etc., etc., etc.

This Work is Invaluable in the household, and to the teacher, scholar, professional man, and self-educator.

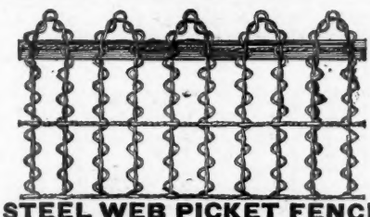
Sold by All Booksellers.

G. & C. Merriam Co. Publishers, Springfield, Mass.

☞ Do not buy cheap photographic reprints of ancient editions.

☞ Send for free prospectus.

WEBSTER'S INTERNATIONAL DICTIONARY



STEEL WEB PICKET FENCE
18 to 50 inches high. Also **Hog and Field Fences,** and Wire Fence Board. Write for circulars.
DeKALB FENCE CO., 6 High Street. DeKalb, Ill.

---

10 DAYS FREE TRIAL

in your own home. First-class Sewing Machines shipped anywhere to anyone in any quantity at **wholesale prices.**
NO MONEY REQUIRED in ADVANCE
We PAY the Freight.

$60	"Kenwood"	**$24.50**
$55	"Kenwood"	**$22.50**
$50	"Arlington"	**$20.50**
$45	"Arlington"	**$18.50**

27 other styles including Standard Singers at **$9.50, $15.50, $17.50.** Full set nickel plated attachments FREE. Latest improvements. Self-setting needle. Self-threading shuttle and automatic bobbin winder. Adapted for light and heavy work. Buy of the manufacturers and save agents and dealers large profits. Send at once for catalogue and testimonials free. **Address** (in full) **CASH BUYERS' UNION, 158-164 W. Van Buren St., Dept. 16, Chicago, Ill.**

Send 10 cts. silver, for postage, etc. and slip of paper size of finger, and we will mail you one of these solid rolled gold engraved rings and catalogue of fast-selling goods for agents to sell. **Howard Mfg. Co., Providence, R. I.**

BE HAPPY WHILE YOU LIVE, FOR

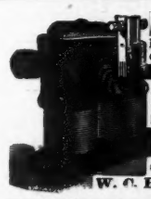
YOU WILL BE A LONG TIME DEAD.

To be Happy buy a

DANDY STEEL MILL

With **Graphite Boxes. Never needs Oil.** The **Dandy Steel Tower** is a **4 Cornered Tower,** and the strongest and best in the market. Will be sent on **30 Days Test Trial,** and if not entirely satisfactory can be returned to us, and **WE WILL PAY FREIGHT BOTH WAYS.** We also manufacture the old Reliable Challenge, O. K. Peerless and Daisy Wind Mills, Pumps, Cylinders, Tanks, Feed Mills, Corn Shellers, Horse Powers, &c.

Challenge Wind Mill & Feed Mill Co.,
Batavia, Kane Co., Ill.



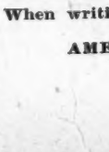
AGENTS $50 to $100 A WEEK.
Ladies or Gents. Best seller known. Needed at every house, place of business or farm the year round. **"Home" Electric Motor** runs all kinds of light machinery. Cheapest power on earth. Connected instantly to wash or sewing machine, corn sheller, pumps, fans, lathes, jewelers' or dentists' machinery, &c. Clean, Noiseless, lasts a life-time. No experience needed. To show in operation means a sale. Guaranteed. Profits immense. Circulars free.
W. C. HARRISON & CO., Columbus, O.

"A dollar saved is a dollar earned."
This **Ladies' Solid French Dongola Kid Button Boot** delivered free anywhere in the U.S., on receipt of Cash, Money Order, or Postal Note, for **$1.50.** Equals every way the boots sold in all retail stores for $2.50.
We make this boot ourselves, therefore we *guarantee* the *fit, style and wear,* and if any one is not satisfied we will refund the money or send another pair. Opera, Toe or Common Sense, widths C, D, E, & EE, sizes 1 to 8, and half sizes. *Send your size; we will fit you.* Illustrated Catalogue **FREE.**
DEXTER SHOE CO. (Incorp'd, **Capital, $1,000,000.**) Order Dep't, **37** Boston, Mass.

---

12 COMPLETE NOVELETTES FREE!

To introduce our large and handsome 20-page, 80-column illustrated literary and family paper, **THE PEOPLE'S HOME JOURNAL,** into thousands of homes where it is not already taken, we make the following special and *extraordinary offer: Upon receipt of only* **Ten Cents** *in silver or postage stamps we will send* THE PEOPLE'S HOME JOURNAL *for* **Three Months,** *and to each subscriber we will also send,* **Free** *and post-paid,* **Twelve Complete Novelettes,** as follows: *The Stricken Home,* by Mrs. Emma D. E. N. Southworth; *Hunted Down,* by Charles Dickens; *The Heiress of Arne,* by the author of "Dora Thorne"; *Vivienne,* by "The Duchess"; *Helen Whitney's Wedding,* by Mrs. Henry Wood; *Under False Colors,* by Miss M. E. Braddon; *Thomas Burke's Wife,* by Mrs. Ann S. Stephens; *The Child of the Wreck,* by Mrs. May Agnes Fleming; *The Lady of Glenwith Grange,* by Wilkie Collins; *Hunter Quatermain's Story,* by H. Rider Haggard; *The Secret Panel,* by Sylvanus Cobb, Jr., and *Eve Holly's Heart,* by Mary Kyle Dallas. These twelve charming complete novelettes by the most famous authors in the world will all be sent *free* to any one sending us ten cents for three months' subscription to our paper. For 50 cents we will send six subscriptions with the 12 complete novelettes free to each. *Satisfaction guaranteed or money refunded.* This is no humbug, but a bona-fide offer by an old-established and reliable publishing house, and a wonderful bargain in reading matter. Address, **F. M. LUPTON, Publisher, 108 Reade St., New York.**



MY WIFE SAYS SHE CANNOT SEE HOW YOU DO IT FOR THE MONEY.
$12 Buys a **$65.00 Improved Oxford Singer** Sewing Machine; perfect working, reliable, finely finished, adapted to light and heavy work, with a complete set of the latest improved attachments free. Each machine guaranteed for 5 years. Buy direct from our factory, and save dealers and agents profit. Send for **FREE CATALOGUE.**
OXFORD MFG. COMPANY, DEPT. D. 7, **CHICAGO, ILL.**

When writing to advertisers be sure to mention the
AMERICAN AGRICULTURIST.

ANIMAL AILMENTS.

Polypus—Tumor of Nose.—Alfred Ryan, Sanilac Co., Mich., has a St. Bernard dog that has a red, fleshy, long lump in one nostril that makes his breathing loud and jerky when asleep, and it is beginning to affect him all the time. These growths usually have a small attachment to the mucous membrane. The treatment must be surgical. A veterinarian will give the dog ether, by inhalation, and twist it off with forceps. When they are irritated, as they always are in the nose of a dog, by his rubbing the nose with his foot, they grow rapidly. The sooner they are removed the better. Do not waste time and money by washes, or local applications. These will do no good, but probably increase the rapidity of the growth. When once removed they seldom return.

Paraplegia—Palsy.—James Moore, Raleigh Co., N. C., has a yearling colt that drags the hinder parts, and has but little power to control the hind quarters in turning around. The cause may have been a blow, a wrench, or a fall. It sometimes arises from indigestion or constipation; and rarely from colic. When the spinal cord is the seat of the trouble, recovery is doubtful. But if from indigestion, or constipation, or other reflex cause, by removing the cause, the effect will cease. Two drams of powdered aloes and one of calomel made into a ball with linseed meal and molasses, should be given; followed by half a dram of nux vomica, and the same quantity of iodide of potassium dissolved in the drinking water, or put into the feed and given night and morning, omitting on observing twitchings of the muscles. It will be well to give half a dram of sulphate of iron and two drams of powdered gentian in the midday feed. Fomentations to the spine early in the attack may prove of essential service; or later, spirits of turpentine rubbed along the spine. These cases are not at all promising, though we should do what we can to relieve the sick animals.

Scratches.—C. E. N. Tindel, Lewis Co., N. Y.: Cracked heels, or scratches, are chops of the skin in and about the hollow of the heels, caused by exposure to cold and wet, the mud and slush of spring and fall, where the hair is long, and the feet are left wet and dirty. Lameness is common at first starting of a morning. Wash with castile soap and warm water, dry, and apply at night an ointment made by rubbing together a dram of finely powdered carbonate of zinc, and four of lard. If there is an indisposition to yield to the above, wash with two ounces of sulphate of copper dissolved in a pint of water. Like sore eyes, it often takes time to cure, and a change for a time of the remedies. One does good for a time and then seems to lose its efficacy, when another must be substituted. Often the remedy that failed at first, ultimately effects the cure.

Ringworm on the Eyelid of Calf.—Alanson Bergen, Windham Co., Vt., bought a calf at auction that had a spot on the eyelid. It is dark colored and is growing. The hair in it falls out. Feed the calf well, and with a camel's hair pencil apply over the ringworm acetic acid, being careful not to let any of the acid run into the eye. If after three or four days, by three applications a day, it is not cured, mix a dram of iodine with an ounce of lard. Have the druggist mix it. Apply this with the point of the finger night and morning. Gently rub it into the eruption. Of course the caution about the acid applies equally well with the iodine ointment. When calves are run down by bad wintering, and ringworms are large and numerous, they prove fatal. Give the calf whole oats in which a teaspoonful of powdered gentian is put. A dozen lumps of sulphate of iron as large as peas should be dissolved and given in the drinking water if the calf is weak and thin.

Jaundice.—Stephen Dick, Albany Co., Wyoming, has a fine Merino buck that has the jaundice. He is dull, sleepy, and has little appetite. His eyes and skin are very yellow. Jaundice is not a disease, but a symptom of any derangement of the biliary secretion, especially causing obstruction of the ducts, as gall stones, flukes, inflammation of the liver, cancer, or fatty degeneration of the liver. Indigestion is a frequent cause of jaundice. Anything that obstructs the flow of bile causes it to be taken into the blood, and thus tinges every tissue of the body yellow. It is this that produces yellow urine, and in not reaching the bowels, the passages are pale or slate-colored in jaundiced subjects. Sheep do not take kindly to emetics. We, therefore, give ten grains of calomel in a tablespoonful of molasses, followed next day by Epsom salts four ounces, half an ounce each of powdered gentian and ginger in half a pint of linseed mucilage. After the bowels have been well moved, give an ounce of castor oil every other day for a week. Pulped roots, bran mash, chopped hay sprinkled with linseed meal and salt, will form a good diet during recovery.

Catarrh or Cold in Mule.—Daniel Collins, Roanoke Co., Va., has a likely young mule that has a hacking cough, is dull, feverish, has watery eyes, and rattles as though phlegm was loose in the throat. When brought out in the wind, she sneezes and coughs, and tears run down the cheeks; drinks freely, or rather is thirsty, but does not seem to swallow easily; breathes short and quick; the mouth is hot and the muzzle is hot and dry; the urine is passed in small quantity; is high colored; bowels constipated; passages dry, hard and glazed over; the ears are sometimes hot, and then cold, so also are the legs. The least move causes cough. The case as minutely described diagnoses a severe cold. Remove the animal to an airy dry box stall; if cool, blanket, give a plentiful clean bed, and put half an ounce of saltpeter in each drink of water; and if the throat is red and sore, put two quarts of bran in a nosebag and pour through it a quart of boiling water, and put the nose in the bag, letting it steam. Half a pint of linseed oil will be required, and good nursing.

Windgalls.—C. N. Tindell, Lewis Co., N. Y.: Windpuffs on the fore ankle, windgalls, or bursæ, are encysted tumors formed by the synovial sheath of a tendon, or by a new cyst developed in one of the fringes of the synovial sheaths. When recent or lately formed, they are fluctuating tumors, and on the human hand they are so translucent as to permit the light of a candle to be seen through them. They contain, not air, which gave them their name, but clear synovial fluid. Where there has been much inflammation, this fluid is thick, sticky, and may contain pus. They sometimes contain small cartilages the size of millet seed, floating in the fluid. They appear about the fetlock joints, and vary in size from a pin's head to a hen's egg. They are generally the result of strain or over-exertion, giving rise to irritation or even inflammation. But the fetlock joint itself is seldom subject to sprain. In order to remove the fluid from an encysted tumor it must be punctured. But it is too little to cause inflammation. Therefore smart friction with an ointment made by rubbing two drams of iodide of potassium into two ounces of lard. But an ounce of biniodide of mercury to ten of lard may prove more satisfactory, though they are liable to return.

Chorea, or St. Vitus's Dance.—Grinnell Thomas, Sheboygan Co., Wis., has a horse that throws up his head and has spasms of the muscles of the throat every time the halter or bridle is put on. It is extremely annoying, and often dangerous, as the animal runs back until the spasms subside. At first the mouth and lips close tight, the horse shuts the eyes with a quiver, and the muscles stand out like great bunches. At all other times the horse seems perfectly well. The affection has its origin in the nervous system, probably of the spinal chord, and affecting the nerves of motion only, as those of sensation are natural. The treatment must be largely of a quieting and careful handling. Commence with a grain of strychnine in a small bran mash, morning and evening; and at the expiration of a week give one and a half grains. Watch the case, and whenever the muscles twitch discontinue the medicine. It often happens that the good effect of the remedy is not realized till this sign appears.

Hoven, or Grass Sickness.—T. E. Lane, Essex Co., N. J.: The principal cause of hoven is fermentation of the young and juicy grasses eaten, and the consequent elimination of the gases into the rumen or paunch, which so compresses the internal organs, that suffocation is almost as sure, and may become as fatal, as though a cord were tied snugly around the neck of the animal. At this season of the year the clover that is most liable to cause the trouble is often bedewed with external moisture, and its succulence and tenderness makes it extremely liable to rapid fermentation, giving out gases copiously. A knife, or other sharp pointed instrument, should be thrust downwards and forward into the paunch. This should be done, as near as may be, a hand-bredth below the backbone and the same distance forward of the hip bone. Push the blade deep in the direction indicated. A trochar and canula are best. Any tube, a tin horn with the mouth broken off, an elder, with the pith punched out, or a green twig—a sucker bent in the middle so as not to break it, must be thrust into the opening so as to permit the escape of the accumulating gases. Though the relief is immediate, yet the fermentation must be checked. Give aromatic spirits of ammonia in half-ounce doses, in half a pint of warm water, every hour as long as necessary.

Sweeney.—M. B. Dee, Bernalillo Co., New Mexico: The term sweeney is what the Germans call schwinden, meaning to grow less, to disappear. It is the stretching of a muscle, sinew, or cartilage, with rupture, or other injury to muscular fibers or tissues—a sprain or strain; usually the result of a slip of the fore foot during a heavy pull, or a sudden wrench in turning, or stepping upon a rolling stone, or stick. All sprains are slow to recover, because there is more or less inflammation, and if neglected, there is atrophy, or sweeney, or schwinden, or wasting of the muscles. By comparing the Sweeneyed shoulder with the sound one, it will be seen to be flatter than the well shoulder. Rest and persistent local applications will be demanded. If fomentations can be properly applied at once after the injury, the parts will be soothed, relaxed, and the fever will be removed. After this will come the dressings, by a thick fold of old flannel, covering a space at least a foot square, dipped in spirits of camphor one ounce, vinegar four ounces, water one pint; alternated with an ounce of tincture of arnica to a pint of water. Cover the whole shoulder with a blanket.

Heart Disease in Shetland Pony.—The little daughter of an old subscriber has a Shetland pony that breathes hard when compelled to take the slightest exercise. The hand placed on the left side of the chest feels a distinct throb. The pony is fat and eats everything. It is, doubtless, heart disease, made worse by stuffing hay and coarse food to excess, and then driven on a full stomach. Unless running out to pasture, few Shetland ponies get regular exercise and proper feeding. Feed one small feed of carrots, say at noon; crushed oats whith bran and a tablespoonful of whole flaxseed in the morning, and the same at night, with a small handful of hay. Feed hay at no other time. If the pony weighs an eighth as much as an ordinary horse, feed one-eighth as much. A teaspoonful of powdered nitre sprinkled over the chopped carrots, will be of some service. Alternate this with half as much iodide of potash; or give either in the drinking water. Slowly exercise an hour after the morning meal; a full hour, but slowly. Beginning with a few minutes at first, gradually increasing up to the full hour. If the long hair can be made thinner and shorter by the vigorous use of the currycomb and brush, the skin, when in a perfect state, will relieve the breathing, if the heart trouble is not too serious.

Fardel or Staggers in Cattle.—Jeremiah McKelvey, Bucks Co., Pa.: Grass staggers occurs frequently during the summer from hard, dry, indigestible food. The seed on the prematurely ripened timothy swallowed without proper mastication produced indigestion. If neglected your ox will soon lose his appetite and strength, become dull, drowsy and constipated, and finally drop down in convulsions and die. The third stomach is packed with hard, dry, indigestible grass. Give half a pound of Epsom salts, dissolved in a pint of thin gruel in which a small handful of common salt and two ounces of ground ginger is mixed. In from four to six hours, give half the quantity of the same; if necessary, follow this with half a pint of linseed oil and one dram of powdered carbonate of ammonia in half a pint or a pint of gruel, one, two, or three times a day till the bowels are regular. Feed sparingly of bran, slop and pulped roots. The hay should be steeped in hot water and given sparingly. Chopped clover and bran will form a good mess once daily. Moderate, regular work, when well enough, will be better than idleness. Stall feeding will be better than pasture. If the case becomes chronic, it will be more profitable to fatten for beef.

THE CROPS OF THE YEAR.

(*Continued from Page* 582.)

crop is large and of excellent quality. Central New York has a fair crop, but there is a very serious shortage in the commercial onion-growing sections of Orange county, and only a fair average product in New England. The total crop bids fair to be no more than last year, and fully 20 per cent less than the large yield two years ago. In the Eastern States the crop has been late, and it is claimed quite a proportion of it will not mature sufficiently for marketing. Prices to the grower are ranging from 65 to 75 cents per bushel in New England and New York State.

The Situation of Hops remains about as stated in our September issue. The financial returns of the harvest are not yet all collected, but fewer purchases than usual of the new crop in New York State and on the Pacific coast have been made, owing to the financial stringency, and also owing to the conflicting reports as to the extent of the shortage in England and Germany. The latest commercial reports indicate that the German crop will be somewhere between one-half and two-thirds an average product, which is equal to about 300,000 bales of 180 pounds each. English growers are slow to accept 28 to 35 cents per pound, believing that higher prices will rule, and the same impression prevails in the United States.

The Condition of Fruit has still further declined. New Jersey, Delaware, Maryland and Virginia, the only States excepting the Pacific that showed good prospects, still have the highest percentages, but lowered greatly by the unprecedented storm of the 28th and 29th of August. California maintains the percentage of August. Oregon and Washington show light losses. Grapes promise well throughout the country. Apples are in very light supply, and exporters are planning to distribute what there is to domestic markets before shipping abroad. Prices for prime winter apples will rule high.

Market and Crop Notes.

Planting Potatoes in the Fall.—S. T. Kenyon, Lewis Co., Ky., writes us: "In December I planted one-eighth of an acre in Early Rose potatoes, as an experiment. The ground, naturally well drained, was deeply plowed and thoroughly pulverized with the harrow, after which furrows three and one-half feet apart were run with the breaking plow, going up and back in same furrow, then making a trench twelve inches deep. Medium-sized whole potatoes were dropped into the furrow, sixteen inches apart. One inch of soil was then put on with a hoe. Following this came ten inches of well-rotted straw, thrown into furrows. The breaking plow, with two horses attached, was then driven up and back on the sides of each row, thus giving the straw a double covering of soil. During the winter following, the coldest weather known in fifty years for this section was experienced, the mercury falling as low as 21° below zero. This was a severe test upon my experimental potato patch, but when spring opened, the potatoes made their appearance promptly and evenly, and early enough to get slightly nipped by the frost. They outstripped all early spring plantings, and by the first of June I had fine potatoes for the table. It was two weeks later before the earliest spring planting was fit for use on the table."

New Classification for Hay.—The severe drouth throughout Europe, during the spring and summer, has so greatly decreased the hay and forage crop, that large importations are being made from America. The New York Produce Exchange has adopted the following rules for the grading of hay and straw: Prime timothy hay shall be pure timothy properly cured, of bright natural color, sound and well baled. Number one hay shall be timothy, not more than one-quarter mixed with other tame grasses, properly cured, bright color, sweet, sound, and well baled. Number two hay shall include all timothy not good enough for number one, with the same admixture of other tame grasses, sweet, sound, and well baled. Number three hay shall include all hay not good enough for other grades, not over one-third clover, but may be natural meadow, free from wild or bog grasses, sweet, sound, and well baled. Clover-mixed hay shall include all hay containing not over two-thirds clover and one-third timothy, properly cured, sweet, sound, and well baled. Clover hay shall be medium grown, properly cured, good color, sweet, sound, and well baled. No grade, or rejected hay, shall include all hay badly cured, musty, stained, or in any way unsound. Number one rye straw shall be clean, bright, long rye straw, pressed in bundles, sound, well and securely baled. Number two rye straw shall be clean, long rye straw, sound, well and securely baled. Oat straw shall be clean, bright oat straw, sound, well and securely baled. All hay and straw dealt in by members of the New York Produce Exchange shall be subject to these conditions, and buyers shall pay one-half the expense of weighing and inspecting, additional to the purchase, and shall also pay all expenses of unloading cars and delivery, not included in the original charge for weighing and inspecting. This rule does not apply to hay and straw delivered directly to the original consignee. France buys only prime timothy, unmixed, while England purchases all the better grades.

Wheat at Thirty Cents a Bushel.—J. O. Smith, Kittitass Co., Wash., writes us: "We have had a most delightful summer. The crops look well and the yield of wheat is enormous, but the price is the lowest for years, being only 30 cents per bushel. We are, however, looking for better times, although few of us could raise money enough to go to the World's Fair. Some farmers about Red Wing, Minn., claim that with the latest improved machinery they can make more money now selling wheat at 40 cents than they could in former years at double the price when old-fashioned methods of handling the crop were employed. It is stated by bankers at Red Wing that the farmers of the immediately surrounding country have on deposit in the banks of that city upward of $1,000,000. If so, it bears out the statement just noted of the profits in wheat culture in the past.

THE
Owen Electric Belt
AND APPLIANCES
FOR MEN AND WOMEN

CURE MANY DISEASES WHEN ALL OTHER REMEDIES FAIL. GET ONE.

(TRADE MARK.)
DR. A. OWEN.

TONE UP THE SYSTEM AND RESTORE LOST VIGOR. TRY ONE.

A GENUINE CURRENT OF ELECTRICITY

Is generated in a battery on the belt, and can be applied to any part of the body. The current can be made mild or strong, as the case may require, and is absolutely under control of the wearer at all times.

OUR ILLUSTRATED CATALOGUE

Contains fullest information regarding the cure of Acute, Chronic and Nervous Diseases, Sworn Testimonials, with portraits of people who have been cured. Price List, and Cuts of Belts and Appliances, and how to order, published in English, German, Swedish and Norwegian Languages. This catalogue will be mailed free to any address on receipt of six cents postage.

The Owen Electric Belt and Appliance Co.,
MAIN OFFICE AND ONLY FACTORY,
THE OWEN ELECTRIC BELT BLDG.,
201 to 211 STATE ST., CHICAGO, ILL.

The Largest Electric Belt Establishment in the World.

When visiting the World's Fair do not fail to see Dr. A. Owen's exhibit, Electricity Building, Section U, Space 1.

When Writing Mention this Paper.

Farmers SEND YOUR Produce
To F. I. SAGE & SON, 183 Reade St., N. Y.
Receivers of all kinds of COUNTRY PRODUCE, including Game, Live and Dressed Poultry and Dressed Calves. *Specialties*—Berries, Grapes, Apples, Pears, Honey, Onions and Potatoes. Correspondence and Consignments solicited. Stencils furnished. Reference: Dun's or Bradstreet's Commercial Reports, to be found at any bank.

Colts
get hurt. Phénol Sodique is a liniment for them; for other animals.
There is nothing that mends so quick.
HANCE BROTHERS & WHITE, Philadelphia.
At druggists. Take no substitute.

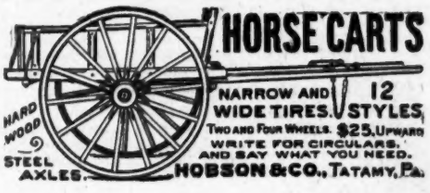
Horse Owners! Try
GOMBAULT'S
Caustic Balsam
A Safe Speedy and Positive Cure

The Safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. *Impossible to produce scar or blemish.*
Every bottle sold is warranted to give satisfaction Price $1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
THE LAWRENCE-WILLIAMS CO., Cleveland, O.

The Davis Baby Cream Separator and and Feed Cooker Combined.
Completest of outfits for a dairy farmer. This machine has an attachment which, when the bowl has been taken out, is dropped into the Separator so that a belt can run to the churn. Write for further particulars. Davis & Rankin Bldg. and Mfg. Co., 240 to 254 W. Lake St., Chicago, Ill., Manufacturers of all kinds of Creamery Machinery and Dairy Supplies. (Agents wanted in every county.)

A "LOW DOWN" MILK WAGON
—IS A—
Great Boon
—FOR—
HARD-WORKED MILKMEN.

Send for Descriptive Catalogue to
Parsons "LOW DOWN" Wagon Co., Earlville N. Y.



OUR LIBRARY CORNER.

New Books and Reports.

LIVINGSTON AND THE TOMATO. Being the History of Experiences in Discovering the Choice Varieties Introduced by him, with Practical Instructions for Growers. By A. W. Livingston. Columbus: A. W. Livingston's Sons. 1893. 176 pp., il., 12 mo., cloth.

The author of this useful volume has therein given to seedsmen, tomato growers and canners, the knowledge he has gained through years of labor, close application and experience in the field. The directions are practical and of advantage to all who grow tomatoes. The leading varieties are described, with methods of cross-fertilization and selection of improved kinds. Full directions are given for cultivation, harvesting and marketing. There are useful recipes for cooking and otherwise preparing tomatoes for the table. Sold by the Orange Judd Co. Price, postpaid, $1.

AMERICAN GRAPE TRAINING. An Account of the leading forms now in use of Training the American Grapes. By L. H. Bailey. New York: The Rural Publishing Co. 1893. 95 pp., il., 12 mo., cloth.

The cultivation of the native American grape is of very recent origin. There are many men who can remember its beginning in a commercial way. The Concord is scarcely 40 years old, and all grape growing in eastern North America is even yet in an experimental stage. The evolution of American grape training is one of the most signal developments of modern horticulture. The author has omitted all reference to the many early methods, which were, in most cases, European practices or their modifications, and has fully described the best American systems. Sold by Orange Judd Company. Price, postpaid, 75 cents.

AGRICULTURE OF PENNSYLVANIA, Containing Reports of the State Board of Agriculture, the State Agricultural Society, the State Dairymen's Association, the State Horticultural Association, and the State College, for 1892. By Thomas J. Edge, Secretary, Harrisburg, Penn. 1892. 600 pp., il., 8vo., cloth.

This handsomely printed and bound volume reflects much credit upon the agriculture of the Keystone State. The progress of farming both at home and abroad is noted, and the results of the scientific experiments of the year are epitomized. There is a most useful illustrated article on the Diseases of the Digestive Organs of the Horse. The Horticulture of the State is also fully treated.

MISSOURI STATE BOARD OF AGRICULTURE. Twenty-Fourth Annual Report for 1891. By Levi Chubbuck, Secretary, Jefferson City, Mo. 1892. 790 pp., il., 8 vo., cloth.

The State of Missouri vests in its State Board of Agriculture the control of the State Veterinary Service, the maintenance of a State Weather Service, the publications of weather and crop bulletins, the holding of an annual series of Farmer's Institutes as a means of instruction in improved methods of Agriculture, the examination once a year of the affairs of the Agricultural College and Experiment Station to report the conditions and needs of those institutions, and the general advancement of the interests of the farmers. The work done in these lines is recorded in this admirable report.

Other Publications.

UNITED STATES GOVERNMENT PUBLICATIONS.

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C. Report of the Secretary, 1892; Report of the statistician; Crop report; Foreign agriculture; Wheat crop of India for 1893; Production of corn in New South Wales; Domestic and transatlantic freight rates (S. R. 107) and Synopsis. Foods and food adulterants—Canned vegetables: A report upon investigations and analytical work directed especially to methods of preserving canned vegetables, to their food value and digestibility, to the preservatives employed, and to the character of the vessels in which the goods are preserved (C. B. 13, viii). Catalogue of the exhibit of economic entomology at the World's Columbian Exposition (E. B. 31). Experiment Station Record (Vol. 4, No. 9): Editorial notes—The Belgian system of agricultural education, and Electricity in agriculture; article on Agricultural education in Belgium, by Paul De Vuyst; abstracts of publications of the agricultural experiment stations in the United States and of the Department of Agriculture; abstracts of reports of foreign investigations, and titles of articles in recent foreign publications. Experiment Station Record (Vol. 4, No. 10): Editorial notes—Home-mixing of fertilizers and Seed-testing; article on the Object and methods of seed investigation, and the Establishment of seed-control stations, by Oscar Burchard; abstracts of publications of the agricultural experiment stations in the United States and of the Department of Agriculture; abstracts of reports of foreign investigation and titles of articles in recent foreign publications. Insect Life (V, 5): A periodical bulletin of the Division of Entomology, devoted to the economy and life habits of insects, especially in their relations to agriculture. Report of the Ornithologist and Mammalogist for 1892, reprinted in a small edition from the Report of the Secretary of Agriculture, 1892. Monthly Weather Review: A summary of weather conditions observed throughout the United States. Summary of international meteorological observations, of interest to meteorologists (W. B. A); The Climate of Chicago, with charts and diagrams (W. B. 10).

AGRICULTURAL EXPERIMENT STATION BULLETINS.

ALABAMA — At Auburn. The effect of organic matter on natural phosphates; Commercial fertilizers (B. 48).

GEORGIA—At Experiment. Practical dairying; Dehorning cattle; Feed formulas; Experiments with oats (B. 2).

INDIANA—At Lafayette. Field experiments with wheat; Forms of nitrogen for wheat (B. 45).

LOUISIANA—At Baton Rouge. Geology and agriculture; Preliminary report upon the hills of Louisiana (B. 2).

MAINE—At Orono. Annual report, Part IV, 1892; Director's report, 1892.

MASSACHUSETTS—At Amherst. Meteorological summary (S. B. 49). Weather (H. B. 55).

NEW YORK—At Geneva. Experiments in the manufacture of cheese (B. 56). Feeding experiments with laying hens (B. 57). Analyses of commercial fertilizers collected in Long Island in the spring of 1893 (B. 58). Cornell University station, at Ithaca. Dehorning cattle; Practical results and Legal decisions (B. 54).

NORTH CAROLINA—At Raleigh. Investigations upon the phosphoric acid in crude fertilizer materials, and upon methods of fertilizer analysis (B. 91 *d*). Meteorological summary for North Carolina (B. 91 *e*).

NORTH DAKOTA—At Fargo. Grain and forage Crops (B. 10).

OHIO—At Wooster. Field experiments with commercial fertilizers (B. 49).

OKLAHOMA—At Stillwater—Notes of progress in experiments; analyses of farm stuffs (B. 6).

UTAH—At Logan. Grass *vs.* Non-grass fed pigs; Exercise *vs.* Non-exercise of pigs; Value of natural waters for crop growth (B. 22).

WISCONSIN—At Madison. Directions for using the Babcock milk test and the lactometer (B. 36).

VERMONT—At Burlington. Sixth annual report. 1892.

MISCELLANEOUS WORKS.

THE OX BOT IN THE UNITED STATES. By C. V. Riley, Ph. D. Author's reprint. Washington, D. C. 8vo. pamphlet.

INDEX KEWENSIS. An index to the names and authorities of all known flowering plants, and their countries. Prospectus. Oxford: Clarendon Press, 1893.

USEFUL AND INJURIOUS INSECTS AND THE GRAPEVINE PHYLLOXERA. By C. L. Marlatt, M. S. Author's Edition. Washington, D. C., 1893.

MISSOURI STATE DAIRYMEN'S ASSOCIATION. Report of proceedings and papers read. Secretary Levi Chubbuck, Columbia, Mo.

THE ELM LEAF BEETLE AT WASHINGTON. By C. V. Riley, in *Canadian Entomologist*, 1893.

PARASITISM IN INSECTS. By C. V. Riley, Ph. D. Author's Reprint from Proceedings of the Entomological Society. Washington, D. C., 1893.

CANADA EXPERIMENT FARMS. Reports of experiments for 1892. Director, William Saunders. Ottawa: Government, 1893.

TENNESSE. Its Resources, Capabilities and Development. By D. G. Goodwin, Nashville, Tenn. Price 35 cents.

ONTARIO AGRICULTURAL COLLEGE AND EXPERIMENT FARM. Eighteenth annual report. President, James Mills, Guelph, Canada.

WORLD'S COLUMBIAN EXPOSITION. Live Stock. Rules, information and premium list. Director-General, George R. Davis, Chicago.

CATALOGUES ACKNOWLEDGED.

CHICAGO VETERINARY COLLEGE, 2537 and 2539 State street, Chicago, Ill. Prospectus of the season for 1893 and 1894. We are glad to note the continued success of this vigorous young institution.

NORTHRUP, BRASLAN & GOODWIN CO., Minneapolis, Minn. Catalogue of northern-grown seeds. This firm makes a specialty of all kinds of seeds grown in northern latitudes.

PITCHER & MANDA, Short Hills, N. J. Illustrated and descriptive catalogue of bulbs, seeds and plants for fall planting. A number of beautiful photographic illustrations embellish this neat pamphlet.

WM. STAHL EVAPORATOR CO., Quincy, Ill. Illustrated and descriptive catalogue of the Excelsior fruit and vegetable evaporator; also descriptive circular of the American cider mill.

W. ATLEE BURPEE & CO., Philadelphia, Pa. Catalogue of flowering bulbs, plants, and seeds for autumn planting; a neat and richly illustrated pamphlet describing all the best varieties of hyacinths, tulips, lilies, and other flowering bulbs.

PETER HENDERSON & CO., 35 and 37 Cortland street, New York City. Circular of special grass mixtures for permanent pasture. These mixtures have been decided upon after extensive experiments, an account of which has been given in the AMERICAN AGRICULTURIST, September, 1892; also descriptive price-list of winter wheats and ryes.

A Salary, with expenses paid, will come handy to anyone who is now out of employment, especially where no previous experience is required to get the position. If you want a position, read advertisement on Page 591, headed "A Chance to Make Money."

The Central Route to Chicago.—Now that the travel to the World's Fair has assumed large proportions, the wisdom of the New York Central management in providing for it, so far in advance, is becoming apparent. The new equipment, comprising elegant Wagner palace sleeping, drawing-room, buffet and dining cars, handsome new coaches and powerful engines, has proven ample to handle the increased business without any discomfort or delay. The great 20-hour flyer, the Empire State Express, and the other limited trains of the Central are the wonder and admiration of the world of travel. Reduced rate excursion tickets to Chicago and return are on sale at all offices.

Your Painter

has often wasted time and material in trying to obtain a shade of color, and has even resorted to the use of ready mixed paints, the ingredients of which he knew nothing about, because of the difficulty in making a shade of color with white lead. This waste can be avoided by the use of National Lead Company's

Pure White Lead Tinting Colors.

These tints are a combination of perfectly pure colors put up in small cans and prepared so that one pound will tint 25 pounds of Strictly Pure White Lead to the shade shown on the can. By this means you will have the best paint in the world, because made of the best materials—

Strictly Pure White Lead

and pure colors. Insist on having one of the brands of white lead that are standard, manufactured by the "Old Dutch" process, and known to be strictly pure:

"ANCHOR" (Cincinnati)
"ARMSTRONG & McKELVY" (Pittsb'gh)
"ATLANTIC" (New York)
"BEYMER-BAUMAN" (Pittsburgh)
"BRADLEY" (New York)
"BROOKLYN" (New York)
"COLLIER" (St. Louis)
"CORNELL" (Buffalo)
"DAVIS-CHAMBERS" (Pittsburgh)
"ECKSTEIN" (Cincinnati)
"JEWETT" (New York)
"KENTUCKY" (Louisville)
"FAHNESTOCK" (Pittsburgh)
"LEWIS" (Philadelphia)
"MORLEY" (Cleveland)
"RED SEAL" (St. Louis)
"SALEM" (Salem, Mass.)
"SHIPMAN" (Chicago)
"SOUTHERN" (St. Louis and Chicago)
"ULSTER" (New York)
"UNION" (New York)

These brands of Strictly Pure White Lead and National Lead Co.'s Pure White Lead Tinting Colors are for sale by the most reliable dealers in paints everywhere.

If you are going to paint, it will pay you to send to us for a book containing information that may save you many a dollar; it will only cost you a postal card to do so.

NATIONAL LEAD CO.,
1 Broadway, New York.

MATTERS OF BUSINESS.

Fat-Stock Exhibit at the Columbian Exposition.—This exhibit begins October 16th, and closes October 28th. It is expected that this exhibit will be in keeping with the magnificent show of breeding animals now in progress. Copies of the official premium list can be had by addressing W. I. Buchanan, Chief, Department of Live Stock, Jackson Park, Chicago, Ill.

National Swine-Breeders' Association. — Mr. J. G. Springer, of Springfield, Ill., secretary of this association, informs us that the annual meeting of this association will be held in the Assembly Hall of the World's Columbian Exposition on October 13th. Swine breeders who have not united in this association should do so, and thus give their aid toward the advancement of the great industry in which they are engaged.

American Shropshire Registry Association.—Members of this association, as well as all those interested in sheep husbandry, are invited to attend the annual meeting to be held on Monday, October 2d, at 10 a. m., in Assembly Hall, Live Stock Building, World's Fair Grounds, Chicago, Ill.

To Hay Growers.—"The Hay Crop in New England" is the title of a little circular issued by the Bradley Fertilizer Co., of Boston, calling the attention of farmers to the wisdom of increasing their hay crops, and how this can best be done. Commercial fertilizers have, for some time, played an important part in hay raising, especially in Maine, where the advantages of their use, as set forth in "The Hay Crop in New England," have been amply proven.

Evaporating Fruits and Vegetables. — The demand for first-class evaporated fruits and vegetables has increased so rapidly within a few years that it is surprising that a good evaporator is not found on every farm where there are orchards. The recent improvements in the construction and management of evaporators, combined with the decrease in their cost, make them a most profitable investment for farmers and fruit growers. The Excelsior Evaporator is sold under a guarantee that each machine is constructed of the very best material, and if operated according to the instructions which accompany each machine, it will give perfect satisfaction. Full directions how to operate these evaporators are given in a neat pamphlet, issued by Wm. Stahl Evaporator Co., Quincy, Ill., which will be mailed free, on application, to readers of the AMERICAN AGRICULTURIST.

The Water Queen Compound Double-Acting Force Pump. — The Water Queen is built upon entirely new principles, and is a fourfold pump, pumping four times as much water per stroke as the old-style so-called double-acting pumps, and twice as much as any two-cylinder pump, although there is but one cylinder. It is compact, light, strong and durable. Old-style pumps, which have a capacity of about thirty gallons per minute, weigh from ninety-five to one hundred and twenty pounds. The Water Queen, with a capacity of forty-five gallons, weighs but thirty pounds. Being light, it costs less for freight, and can be shipped by express about as cheaply as by freight. It is anti-freezing, and is arranged for use with windmill, or hand, as desired. Can also be arranged, when so ordered, as an aerating pump, for purifying wells or cisterns. These pumps are manufactured by the Stimmel & Hook Mfg. Co., Turner, Ill., who will be pleased to mail their catalogues to all readers of the AMERICAN AGRICULTURIST who may apply for it.

"Economy is the Road to Wealth."—Householders frequently complain through the winter of the large quantity of coal consumed in heating their dwellings; also of the over-warm condition of the cellar, which causes fruits and vegetables stored there to decay, and renders it necessary, in many cases, to use ice the entire year, to properly keep butter, milk, and other perishable food. Even with this large expenditure for fuel, it is often impossible to comfortably warm the house; and occasionally the woodwork ignites from the hot pipe running from the furnace to the register, and a serious conflagration results, which might have been avoided by the use of a proper non-conducting covering on the pipes. This loss of heat, and, consequently, waste of fuel, can be stopped. Heating plants that do not give proper service can be made efficient by the use of the mineral Asbestos, if applied in proper form. It is clean and handy, fireproof and safe; it stops radiation, prevents loss, and saves money. The H. W. Johns Mfg. Co., of 87 Maiden Lane, New York, have given special attention to the manufacture ofnon-conducting Asbestos goods, and produce a variety of materials covering all classes of requirements. Their catalogue, which gives a good deal of valuable information on this subject, will be mailed free to all readers of the AMERICAN AGRICULTURIST who apply for it.

Nervousness.

The investigations and recent discoveries by Dr. C. A. Wilson, (Faculty Prize, Medical College of Ohio, 1879), concerning the causes and pathology of nervous prostration, dyspepsia and spinal irritation invest the cure of these diseases with a certainty and rapidity hitherto wanting. Arrangements are now perfected that sufferers can obtain the new and effectual home treatment direct from Dr. Wilson, at Rochester, Ind.

Fourteen-Hour Wives
of Eight-Hour Men, need
GOLD DUST
Washing Powder
To enable them to get through work as early as their husbands.
GOLD DUST saves time, strength, patience and money.

Made only by
N. K. Fairbank & Co.,
CHICAGO,
St. Louis,
New York,
Philadelphia,
Boston,
Montreal.

Keeps Your Chickens
STRONG AND HEALTHY!
Sheridan's Condition Powder
Prevents all Disease; Cholera, Roup, Leg Weakness, Etc.
NOTHING ON EARTH WILL MAKE HENS LAY LIKE SHERIDAN'S CONDITION POWDER
No Matter What Kind of Feed You Use!
SHERIDAN'S CONDITION POWDER
Is needed with it to assure perfect assimilation of the food elements necessary to produce eggs
Small Package, FIVE for One Dollar.

Large 2 1-4 lb. Can, SIX for Five Dollars.
It is absolutely pure; Highly concentrated; Most Economical, because such small doses; No other kind one-fourth as strong; In quantity costs less than one-tenth ct. a day per hen; Use freely when hens are moulting; Strictly a Medicine; Not a Food; You can buy or raise food as cheap as we can; "One large can saved me $40, send six more to prevent roup this winter," says a customer; Will make your pullets lay when eggs are high. Sold by druggists, grocers and feed dealers; No other ever made like it; Large cans most economical to buy.
If You Can't Get it Near Home, Send to Us. Ask first.
We send postpaid one pack for 25c; Five $1. A 2 1-4 lb. can $1.20; Six cans $5, express paid. Sample copy of FARM-POULTRY, "the best poultry paper" published, sent free. One large can and a year's subscription to Farm-Poultry sent for $1.50, cash or stamps. I. S. JOHNSON & CO., 22 Custom House Street, Boston, Mass.

BUY A Morton Tread Horse Power! Why?
It is the easiest and quickest moved and set.
It occupies less floor space than the sweep power.
It has an adjustable elevation and does not require a driver.
It has a perfect automatic governor to control the motion.
It is sold direct to the user and fully guaranteed.
Also manufacturers of Corn Huskers, Feed Cutters, etc. Write for special 1893 prices. Address
MORTON MANUFACTURING CO., Muskegon Heights, Mich.

SCIENCE IN FARMING.

Varieties of Cotton.—That the merits of varieties of cotton depend essentially upon the culture they receive and the care in seed selection, is shown by the experiments at the Arkansas station by R. L. Bennett and G. B. Irby (B. 23). Short Limb cotton should have a large, available supply of plant food, frequent shallow culture and the stalks close in the rows, while the Long Limb requires a wider distance between the plants. One year's selection of the best seed will improve very much the yield, prolificness and earliness. Care in preserving seed is very important, saving seed in planting, and success or failure of the year's work depending largely upon it. The length of staple is dependent upon a long growing season, and an abundance of plant food, moisture and variety. Extra length can be produced only on long limbed, slow maturing varieties. Bottom boll seed yields more lint and seed than top bolls, and seed from the latter is inferior for planting. Shallow culture is preferable to deep, particularly if a good seed bed was prepared, and the variety is short limbed and early. Deep culture is injurious, except in rare cases, such as to check too rapid weed growth, or to break rain-packed soil when the cotton is young. Exposure on the stalks to bad weather reduces very much the value of the lint. Ginning also influences the quality of the fiber. A proper system of rotation of crop will maintain the fertility of many soils and will improve worn soils.

Digestibility of Corn Fodder.—Seventy and one-half millions of acres of maize are grown yearly in the United States, mostly for the grain, but the curing of the fodder is also increasing. Feeding experiments conducted by H. J. Patterson of the Maryland station (B. 20) show that all parts of the corn plant contain valuable food materials, the dry matter having nearly the same composition. The corn stalks and husks contain 60 per cent. of the total digestible matter produced by the plant, the blades 11 per cent., and the ears 29 per cent. The corn fodder from one acre yielded as much digestible matter as two tons of timothy hay, and more food than was contained in the corn ears from the same acre. The husks contain 72 per cent. of digestible matter; the stalks, 66½ per cent.; the blades, 64½ per cent.; and the topped stover 55 per cent., all of which furnish a food rich in digestible carbohydrates. There is enough digestible matter produced by the corn fodder grown in the Southern States, to winter all the live stock raised in those States if it were properly preserved and prepared in a palatable form. By cutting and crushing the corn stalks, cattle will eat and utilize nearly all of them. Maize fodder, fed alone, will nearly maintain cattle, but it should be supplemented with some food rich in nitrogen when feeding for the production of growth, flesh, or milk.

Fertilizers for Wheat.—Experiments at the Ohio station by C. E. Thorne and J. F. Hickman (B. 49) show that the use of superphosphate and potash, separately, or in combination, but without nitrogen, has frequently caused a loss of grain in crops of wheat or of corn, on soils deficient in vegetable matter. The yield of straw or stalks has almost invariably been increased by the use of superphosphate. The latter has frequently, and potash has occasionally, been followed by a considerable increase of crop, both of grain and straw or stalks, on sod ground, or land containing an abundance of decomposing vegetable matter. An increase of grain has generally followed the use of nitrate of soda, and this has happened in almost every case when the nitrate has been used in combination with superphosphate or potash. When a complete fertilizer has been used, containing both phosphoric acid and potash, in combination with nitrogen, the phosphoric acid being carried in less active forms than boneblack superphosphate, an increase of crop has resulted in practically every case, but at present prices of fertilizers and grain, respectively, this increase has invariably cost more than its value in the market. While, therefore, these experiments demonstrate the possibility of producing a regular and certain increase in the yield of cereal crops by the use of a complete chemical fertilizer, yet they show that if such fertilizers are to be used with any prospect of profit in the fertile soils of the Mississippi valley, the system of farming must provide for the accumulation in the soil of the largest possible quantity of organic nitrogen, through the culture in short rotations of plants which have the power of obtaining nitrogen from sources inaccessible to the cereals.

Winter Gardening.—In the Gulf States many hardy crops can be grown in the open air, with slight protection during the freezing weather. In colder climates glass-roofed forcing houses are much used. W. J. Green and W. S. Turner, of the Ohio station, report (B. 43) that the soil used should be highly fertilized with a compost made principally from stable manure. Such a compost usually contains a sufficient supply of plant food, and in a cheaper form than is generally found in commercial fertilizers. No chemical fertilizer, either singly or in combination, was found to be of any value for lettuce, radishes, cucumbers and tomatoes. Beds were so constructed as to admit of watering by sub-irrigation, through porous drain tile pipes two and one-half feet apart. When all the water required by the plants was supplied in this manner, none being sprinkled on the foliage, the result on lettuce was very marked, the gain of sub-irrigated over surface-watered being about fifty per cent. Sub-irrigated radishes came to maturity several days earlier; cucumbers were much benefited, but tomatoes showed only a slight gain. The best method of watering small plants or newly-sown seed, was by a form of sub-irrigation, known as the water bench. Some water is poured into the water-tight trough, and the plants or seeds, in flats or trays holding about two inches of soil above the slatted bottoms, are set in the water for a short time. A crop of lettuce, thus treated, comes to maturity from one to two weeks earlier. Nearly all kinds of vegetables can be grown in the forcing-house, but lettuce, mushrooms, radishes and tomatoes pay best. Cucumbers, beans, dandelion greens, cauliflower and rhubarb may be grown with some profit.

Corn Fodder in the Colder Climates.—The corn plant increases in weight, in dry matter, and in value, as it grows older, but J. L. Hills, of the Vermont station, reports (R. '92) that the nitrogen-free extract matter increases so much faster than any other food ingredient, that the dry matter decreases in quality as it grows older. The great increase in weight, however, far overbalances the loss in quality. Green corn fodder usually weighs the most just as the kernels begin to glaze, but it does not contain as much dry matter as when fully glazed and mature, hence such varieties as will mature in the colder latitudes should stand till ripened, while those which do not mature, should stand as long as they are safe from frost. The increase in dry matter, after the kernel has begun to glaze, is mainly nitrogen-free extract, hence it may not always pay to run the risk of frosts for the sake of increased weight of starch and sugar, especially if the fodder is to stand in the shocks. If intended for the silo, the crop can be grown closer to the time of frosts without danger, and with increase in feeding value.

Growth and Culture of Wheat.—The wheat experiments, by W. C. Latta and H. A. Huston, at the Indiana station (B. 45), show that the rotation of crops, as compared with constant grain cropping for seven years, has resulted in an average gain of five and seven-tenths bushels per acre per year in favor of rotating. Experiments with many varieties, covering ten years with some, do not indicate any tendency of wheat to deteriorate or "run out," provided proper care is exercised in the screening of the seed. No wheat has proven rust-proof, though early wheats are generally less injured by rust than later kinds. Eight pecks of seed per acre have given the largest yields of grain, the average yield for nine years being over thirty and one-third bushels per acre. The best results at the station have come from sowings made not later than September 20th. In comparing forms of nitrogen as fertilizers for wheat, sulphate of ammonia gave better results than nitrate of soda or dried blood. Greater profits have resulted from the use of stable manure than from high grade commercial fertilizers. Fresh horse manure has generally returned its cost in the first crop, and the improved condition of the soil for future crops adds something more to the credit of the manure. Wheat may be safely harvested at any time, from the dough stage to a dead ripe condition, without appreciably affecting the weight or the yield of grain. Mowing wheat in the spring to prevent too great rankness of growth, did not prove profitable.

FARMING IN FOREIGN LANDS.

The Minister of Agriculture for Germany has reduced the forest duties, in view of the scarcity of feed stuffs.

The increase of Russian grain exports to countries in the Mediterranean, particularly to Spain, has been noteworthy.

In New Zealand there has been exceptionally wet weather, unfavorable for stock, though prices have been fairly maintained.

In the south of Spain, wood, pasture lands, and fields with growing crops have been devastated by fires, and farmhouses destroyed.

A trial shipment of oranges from Queensland arrived in London in splendid condition, but in one of pineapples the fruit was too ripe.

Owing to a sharp frost early in July, the buckwheat crop of Western Russia was entirely destroyed, and potatoes were also frost-bitten.

The wheat harvest in Italy yielded very satistory returns. Maize, olives and vines promised good crops, and fodder crops were benefited by late rains.

Hens have been dying in large numbers in England, from the effect of the heat and drouth. The birds seemed to be overcome by a sort of apoplexy, dying very quickly.

During the first half of the present year, the United Kingdom imported 63,000 tons of hay, as compared with 26,000 tons during the first six months of last year.

The French Minister of Agriculture now issues monthly crop reports, as is done in Germany and Hungary. In England this work is undertaken by the *London Times*.

Rinderpest has been prevalent in the southern provinces of Russia, being first brought from the neighborhood of the River Don, where 10,000 head of cattle were attacked.

The French potato crop has yielded above an average in thirty-four departments, an average in twenty-seven, and below an average crop in twenty-four departments.

The permission to collect dead leaves in the forests of Austria, which has been restricted of late years, has now been liberally extended, because fodder is so scarce.

After the severe drouth in England, rains delayed the harvest of the cereal crops, and caused mildew and sprouting in the ear, besides bringing on potato disease.

Experimental wheat culture has been greatly extended in the colony of Queensland, Australia, and scores of cultivators will make their first attempt this coming season.

The crop of apples and pears will be an excellent one throughout France, and picking was expected to be finished this month, which is about six weeks earlier than usual.

An outbreak of potato disease has occurred in Ireland, doing considerable damage in the southwest. Efforts were made to counteract the disease by spraying with different solutions.

The Italian wheat crop is placed at 120,000,000 bushels, as against 112,000,000 bushels in 1892, and 138,000,000 bushels in 1891. Italy will probably need to import 26,000,000 bushels this season.

Crops in Russia appear to have done well, not only the winter but also the spring crops, especially in the south, southwestern and central agricultural parts. The winter rye crops are the best.

The decrease in last year's Cuban sugar crop was over 200,000 tons, as compared with a year ago, but the growing cane is doing exceedingly well in the largest producing districts, for the coming season.

Statistics of bankruptcy in England show that, during the first half of this year, forty per cent. more farmers became bankrupt than two years ago, the average being one farmer for every working day in the year.

Breeders of sheep in the south of England have had several years of declining values, terminating last year in disastrous losses, consequent upon the absence of feed, owing to the bleak winter and unfavorable spring.

The wheat harvest of Uruguay, this year, was nearly three-fourths greater than in 1892, and this, too, during a season of one of the worst drouths the Republic has suffered for years, and in the

face of serious insect plagues. Uruguay is being rapidly converted from a pastoral to an agricul tural country.

The geranium growers of France and Algeria are feeling competition from distillers in Réunion, where the output is increasing very rapidly, every steamer arriving at Marseilles bringing consignments of geranium oil.

Harvest prospects continue excellent throughout Russia, particularly for the barley crop. Market prices were firm for barley, maize and rye, but weak for wheat. Hay was bought largely by the French army authorities.

In Manitoba, Canada, the area planted to wheat this year is 1,000,000 acres, as against 875,000 acres last year. The increase is largely accounted for by the continual arrival of new settlers from Great Britain and elsewhere.

The wool clip of the 1892-'93 season, in Argentina, was 326,000 bales, as against 351,000 bales in the preceding year, a decrease of more than four per cent. Though the lambing turned out well, the wool lacked its usual full and healthy growth.

There was considerable abortion among young ewes in England, owing to the extreme wet early in the season, the ewes having wet backs for more than a month. There have been more barren ewes than usual, and decidedly fewer twins.

A considerable portion of the area planted to sugar beets in France will give but a low agricultural yield. In Russia the prospects for a beet-sugar crop are good, but in other European countries the beets have suffered from want of rain.

Pork products will soon be developed as a branch of the farming industry of the progressive colony of New Zealand, arrangements being in progress for an extension of hog breeding, the farmers to sell direct to the provision factories.

The violet crops in the south of France gave only a moderate yield this season, not quite sufficient to supply the local manufacturers. For several years the violet plants have suffered from a blight that has injured the flowering.

Tobacco cultivation forms a very great resource in Paraguay, few countries in the world possessing, as it does, all the requisite conditions for the cultivation of this plant, the want of care displayed in collecting and preparing it having alone excluded it from European markets.

In Austria the rye crop was an average one, and wheat slightly better than that of rye. Barley was a small crop, but better than oats, which was the worst crop of the year. The prospects for corn, beets and potatoes improved as the season advanced. The hay harvest was an average one.

The area planted to wheat in India last season was 26,238,000 acres as compared with 24,452,000 acres for the previous season, an increase of over seven per cent. This year's yield amounted to rather more than 267,000,000 bushels as compared with 206,640,000 bushels a year ago, being an increase of 29 per cent. for the latest season.

The death is announced of Mons. Felix Guiltet, who has directed since its foundation, in 1879, the *Journal of Agriculture* of the Lower Pyrenees. He was the author of numerous agricultural publications, and a distinguished and conscientious worker. He died the day before he was to have been presented with the order of the *Merite Agricole*.

At a reception given by the German Agricultural Society at Munich, Prince Louis, son of the Prince Regent, presided. He declared that the condition of agriculture demonstrated the absolute necessity for the co-operation of all callings and industries, though he admitted it would be difficult to discover a fair adjustment of the many antagonistic interests.

The production of cotton is rapidly increasing in quantity in the Transcaspian provinces of Russia. Last year as many as 72,565 tons of raw cotton were transported across the Caspian to Baku, and thence by the Trans-Caucasian railway to Batoum and Poti. After reshipment at these places the cotton was conveyed to Odessa and Sebastopol, and thence to the weaving mills at Lodz, Warsaw and those in the Moscow district. It being cheaper than either American or Egyptian cotton, which pays a very heavy import duty, it may be that in a few years, when the cotton crop of the Transcaspian provinces will suffice to furnish the raw material required by the Russian mills, American and Egyptian cotton will cease to be bought in Russia.

A New Jersey Miracle.

HELPLESS FOR YEARS WITH LOCOMOTOR ATAXIA AND RHEUMATISM. HIS CASE PRONOUNCED HOPELESS BY THE LEADING PHYSICIANS OF SUSSEX COUNTY.

(*By Special Correspondence to the N. Y. Press.*)

The busy little village of Branchville, N. J., has been the scene of a modern miracle. Chas. F. Struble, a well-known and prosperous farmer, living on Homestead Farm, in Frankford Township, a few miles from Branchville, is just now the chief subject of discussion throughout Sussex County.

The *Press* is always up to date in its news, both political or medical, and has procured the following from Mr. Struble's own lips:

"I have been troubled with rheumatism off and on for 20 years. I have tried all kinds of medicines and treatments. I have taken sulphur baths at Hamburg, N. J., Newton, N. J., and in New York City with a doctor who charged me $2.50 a bath each day. An English doctor treated me with a galvanic battery at Rockaway, Morris Co., N. Y. I have tried many doctors. None of them did me any permanent good. I used all kinds of liniments I could hear of but without avail.

"About two years ago I was taken much worse and my doctor said I had locomotor ataxia of the spine, and that the chances were against me. After treating for a time, he finally gave me up and said he had done all he could for me.

"The cords of my limbs were drawn tight as the cords on a kettle drum, and I had such cramps in my limbs that I suffered terrible pain. My feet were cold all the time. I had to use a hot water bag and heated bricks to my feet, but even then I could not get any relief.

"Finally I heard of Dr. Williams' Pink Pills for Pale People, and I commenced taking them on Feb. 5th, 1893. I found in three days' time that the cords in my legs began to 'let up,' my feet began to get warm, I began to eat and sleep well, and in one month I had gained six pounds. The numbness in my limbs began to leave me too, and today I feel like a new man, and cannot say too much in praise of Dr. Williams' Pink Pills. I am able to walk and do some work, and all this is after using only nine boxes of Pink Pills. I feel so grateful for my recovery that I am glad to let the public know what these pills have done for me."

In order to emphasize his story, Mr. Struble made the following affidavit:

Sworn and subscribed before me this thirteenth day of April, A. D., 1893.

IRA COSS, *Justice of the Peace.*

Justice Coss evidenced his interest and good feeling by the following certificate:

I hereby certify that all that Mr. Struble says regarding his rheumatic and other troubles I believe to be true and correct.

IRA COSS, *Justice of the Peace.*

On the farm with Mr. Struble live his two adult sisters. Miss Annie M. Struble made the following statement:

"Dr. Williams' Pink Pills for Pale People have done wonderful things for my brother. He was in a helpless condition when I left him on Jan. 12th, last, and when I returned on March 25th, I found him cured. The most remarkable thing about the case," she continued "is the curing of his lameness. Of course I wanted to know all about the causes of such a wonderful change, and I learned from him, and my sister and others, that during my absence he had been using the Pink Pills, and that his recovery was attributed solely to them."

Miss Mary E. Struble said: "I saw my brother in all the stages of the disease. He began improving as soon as he began taking the Pink Pills. When my sister went away in January, he was apparently at death's door, and nobody seemed to have any hope for him. He certainly had little or none for himself, and he was very despondent, in spite of all efforts to cheer him. He declared that he felt better as soon as he began taking the Pink Pills, and to one who, like myself, was attending him day by day, there could be no doubt that they, and they alone, were the cause of his improvement. Why all other things he had tried he had abandoned, for they had failed to do him the slightest good. What else could have put him on his feet again? We don't wonder at his enthusiasm for the Pink Pills.

George J. Bowman, the proprietor of the American Hotel at Branchville, said: "All that Mr. Struble says in reference to the Pink Pills I know to be true. In fact he can't say too much about them for they have undoubtedly saved his life."

At the Branchville drug store, chief clerk Henry Beemer remarked, "I have no doubt that Dr. Williams' Pink Pills have cured Mr. Struble." Joseph H. McDonald, the proprietor of the General Store of Branchville, and Postmaster Knox, expressed themselves in similar terms.

Pink Pills for many years previous to their general manufacture were used as a prescription. At first they were chiefly prescribed for impure blood and general weakness. Now they are found to be a never failing specific for such diseases as locomotor ataxia, partial paralysis, St. Vitus dance, sciatica, neuralgia, rheumatism, nervous headache, the after effect of La Grippe, palpitation of the heart, pale and sallow complexions, and all diseases of the blood, such as scrofula, chronic erysipelas, etc.

They are also a specific for troubles peculiar to females, such as suppressions, irregularities, and all forms of weakness. They build up the blood and restore the glow of health to pale and sallow cheeks. In men they effect a radical cure in all cases arising from mental worry, overwork, or excesses of whatever nature. Pink Pills are sold in boxes (never in loose form, by the dozen or hundred, and the public is cautioned against numerous imitations sold in this shape), at 50 cents a box or six boxes for $2.50, and may be had of all druggists or direct by mail from Dr. Williams' Medicine Company, Schenectady, N. Y., or Brockville, Ont.

DROPSY TREATED FREE Positively CURED with Vegetable Remedies. Have cured many thousand cases called hopeless. From first dose symptoms rapidly disappear, and in ten days at least two-tairds of all symptoms are removed. BOOK of testimonials of miraculous cures sent FREE. 10 DAYS TREATMENT FREE by mail. DR. H. H. GREEN & SONS, Specialists, ATLANTA, GA.

RUPTURE A positive radical cure at home. (Sealed) Book giving full particulars sent FREE. Address DR. W. S. RICE, Box 444 Smithville, Jefferson Co. N.Y.

KIDNEYS AND BLADDER I will send full particulars of a Certain Cure for all diseases of the above free. Dr. D. A. WILLIAMS, East Hampton, Conn.

ALLEN'S NEW AMERICAN FARM BOOK.

The Best Book on Farming.

The very best book ever written for the use and information of farmers is Allen's New American Farm Book, is the opinion formed by many of our best thinkers who give such subjects their attention. The book embraces every branch of the subject which can be brought within the confines of one handy sized volume, and is not only worthy of a place, but should be found on the bookshelves of every modern American farmer.

With only this book as a guide, even if no other authority is at hand for consultation, no farmer need go very far astray in the conduct of his farm, and in these days of active competition and the many new devices for making and saving all kinds of crops, even the old established usages, which can never wear out or become obsolete, receive a new interpretation, a new and enlarged meaning when studied by the light of this valuable book.—From *Texas Farm and Ranch.*

Cloth, 12mo.

Sent Postpaid for $2.50.

ORANGE JUDD CO., PUBLISHERS,

52 and 54 Lafayette Place, New York.

BOOKS FOR FARMERS!

STOCK BREEDERS, GARDENERS, FLORISTS, FRUIT GROWERS,

And all others interested in **Rural Life.** We supply any book published on the above subjects. **CATALOGUE** of **600** standard works **sent free.**

ORANGE JUDD CO., New York.

An Instructive Display.

THE COLUMBIAN EXHIBIT OF AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

Soon after the Columbian Exposition became a fixed fact, the Association of American Agricultural Colleges and Experiment Stations decided that this was an opportunity, which should not be neglected, for the affiliated institutions to make a joint report to the people of this and other countries, in the form of a great object lesson, of the way they are trying to execute the trust devolved upon them. The Association appointed committees on the Collective College Exhibit, the Collective Station Exhibit, and the work of preparation began two years ago. It was early decided that the best place for this display was not in the general educational exhibit, nor in the United States Government building, but as a part of the agricultural department of the Exposition, and to this the authorities agreed. At first it was proposed to show only the agricultural work of the colleges, but as there have been so much misunderstanding, and wrong impressions of one-sidedness and narrow work by these institutions, the scheme was extended to include the leading industrial departments of the colleges, that people might see something of the range of instruction which they offer. To show their work in literature, language, history, economics, pure mathematics, etc., seemed impracticable in this connection. Thus, has been built up and completed the truly remarkable exhibit, which occupies about a quarter of an acre in the southwest corner of the Agricultural building of the Exposition at Chicago.

This exhibit is regarded as one of the best things in the general agricultural display. It has attracted a great deal of attention, and should not be missed by those who are yet to visit the Exposition. There has been no attempt to make a complete exhibit of any particular college or experiment station. The various institutions have contributed samples of their equipment and their work, covering a great variety of subjects, and competent committees have classified and arranged this mass of material by topics. The effect is much as if the industrial features of one good college were comprehensively shown, and as if one station, of an uncommonly wide range of research, had placed on exhibition its entire operations and its museum collections. One of the most commendable features is the thoroughness with which the exhibit has been furnished with display cards, labels and explanatory data, which enable the visitor to know what he sees, its purpose, and the lesson it is intended to teach. Besides this, the colleges and stations detail professors and staff officers for a month each, so that six or eight attendants are constantly in Chicago for duty with this exhibit, operating the laboratories and making all needed explanations to visitors.

It can be readily understood that this exhibit involved a vast amount of skilled labor in its preparation, as well as the expenditure of a good deal of money, and that the current expenses of care and demonstration are considerable. Colleges and stations in numerous States voluntarily assumed the work of preparation and packing, with the incidental expenses, and the burden was thus well distributed, although some institutions very generously contributed more than their due share in labor and money. Additional means were needed and the exhibit could not have been completed without the material aid of the general government. The United States Department of Agriculture, which holds legal relations to the stations under the Hatch Act, offered to adopt the station exhibit as a portion of its own, and set apart funds from its Exposition allowance to pay the cost of transportation, installation and maintenance. Later, friends of the colleges secured a moderate special appropriation by Congress, to be expended for the college exhibit, also under supervision of the Department of Agriculture. Altogether a sum of about twenty thousand dollars was available for this exhibit, after the material for it had been prepared in the several States.

The entire exhibit is upon a platform, raised one step above the floor, and rectangular in shape, located in the corner of the Agricultural building near the exits to the live-stock amphitheatre and colonade which leads to Machinery Hall. In the middle of the space is the special exhibit of the United States Office of Experiment Stations and what is known as the picture gallery.

(*Continued on Page* 591.)

This Grand Organ $45.00

complete with stool and instruction book. Safe delivery guaranteed. Free test trial in your own home without a penny in advance. Price $45.00 cash or $50.00 on credit, $10.00 down and $5.00 per month. This offer **stands unequalled** in the annals of organ making. It is **the red letter offer of a lifetime**—never equaled, and never will be. This is our No. 23,000

GOOD HOPE ORGAN

brand new, (exactly like cut) absolutely perfect, containing all the latest and best improvements. Solid Black Walnut Case. **10** Effective Stops. **3** Sets Orchestral Toned Reeds, Double Octave Couplers, New Tone Swell, Grand Organ Swell, all known modern improvements, making a **complete Parlor Organ, specially warranted 10 years.** The **regular retail price of this Organ is $78.00.** This is but one of **MANY BARGAINS** in Organs and Pianos to be found in our mammoth Illustrated Catalogue. **Organs from $27.50 up. Pianos from $175 up.** We send it absolutely **FREE** to anyone, anywhere. **Send for it at once** and see how much better you can do by buying from our factory **at manufacturer's prices.** It shows you how you can get **the best Organs and Pianos** at bed rock prices for cash or

ON EASY CREDIT.

Remember we do **the largest business in the world,** and can do better for you than anybody in the world. **Investigate our methods.** Compare our prices and our instruments with those offered by dealers. Ask any bank or commercial agency in the U. S. about our responsibility. **Our factory is always open for inspection,** and if you live within a reasonable distance and wish to purchase, **we will pay your expenses.** Don't delay—act at once. This offer will not last forever. When writing mention this paper.

CORNISH & CO., Established 27 Years. **Washington, New Jersey.**

Unlike the Dutch Process

No Alkalies
—OR—
Other Chemicals
are used in the preparation of
W. BAKER & CO.'S
Breakfast Cocoa

which is absolutely pure and soluble.

It has *more than three times the strength* of Cocoa mixed with Starch, Arrowroot or Sugar, and is far more economical, *costing less than one cent a cup.* It is delicious, nourishing, and EASILY DIGESTED.

Sold by Grocers everywhere.

W. BAKER & CO., Dorchester, Mass.

SAVE MONEY

$150 Top Buggy.... $75.00
$100 Top Buggy.... $52.50
$85 Top Buggy.... $40.00
$85 Spring Wagon... $43.50
$10 Single Harness.... $5.25
$28 Team Harness... $14.50
$16 Texas Saddle..... $9.25

ALL GOODS FULLY WARRANTED and shipped anywhere to anyone at WHOLESALE prices, with privilege to examine. We are headquarters for Buggies, Carts, Phaetons, Express Wagons, Harness, Saddles, etc. Send at once for free catalogue. **CASH BUYERS' UNION, 158 W. Van Buren St., B 40 Chicago, Ill.**

The High Speed Family Knitter

Will knit a stocking heel and toe in ten minutes. Will knit everything required in the household from homespun or factory, wool or cotton yarns. The most practical knitter on the market. A child can operate it. **Strong, Durable, Simple, Rapid.** Satisfaction guaranteed or no pay. Agents wanted. For particulars and sample work, address, **J. E. GEARHART, Clearfield, Pa.**

WALL PAPERS

On receipt of 5 Cents for postage we will mail **FREE!** the largest selected line of samples, and lowest prices in the U. S., **with Instructions How to Paper.**

CHAS. M. N. KILLEN, 614 & 616 So. 20th St., Phila.

Dress Goods

FOR EARLY FALL.

We call special attention to eleven remarkable values, in lines of goods made exclusively for our own trade:

2 Lines Fancy Suitings, 52 inches wide	85c. per yard
2 Lines Diagonal Suitings, 50 inches wide	$1.00 per yard
2 Lines Mottled Suitings, 48 inches wide	$1.00 per yard
2 Lines Illuminated Diagonal Suitings, 48 inches wide	$1.25 per yard
1 Line Four-Toned Dashed Suitings, 50 inches wide	$1.25 per yard
2 Lines Covert Tailor Cloth Suitings, 52 inches wide	$1.50 per yard

Samples sent on request.

James McCreery & Co.,

Broadway and 11th St., New York.

1854.-Established 39 Years.-1893.

GEM STEEL WIND MILLS

THE OLD RELIABLE
HALLADAY STANDARD,
HALLADAY GEARED and
U. S. Solid Wheel

Guaranteed to be the BEST MADE.

Also Pumps, Tanks, Corn Shellers, Feed Mills, Stalk Cutters, Haying Tools, Saw Tables, Etc.

SEND FOR CATALOGUE.

U. S. WIND ENGINE & PUMP CO.
115 River St., BATAVIA, ILL.

An Instructive Display.

(*Continued from Page* 590.)

This office illustrates its own work on the *Experiment Station Record*, the monthly publication of the Department, which epitomizes the progress of agricultural investigation in foreign countries, as well as in our own; also its methods of preparing and distributing the card index of experimental literature, so invaluable to every station worker. A complete set of the publications of the agricultural experiment stations in the United States is also shown, and a good assortment of the publications of most of the colleges of agriculture and mechanic arts. The very large collection of pictures exhibited here are mainly photographic views of the grounds, buildings, interiors and equipment of various colleges and stations; also of officers and students, of classes engaged in practical work, of scenes in college life, and operations at the stations. These pictures, several hundred in number, are arranged by States, hung in swing frames, and every one plainly labeled; collectively, they will give any one a very good idea of the character of the institutions represented, their property, and their facilities for work. Appropriately assigned to prominent positions in this central space, are a fine bust of Senator Justin S. Morrill, of Vermont, author of the acts of 1862 and 1890 for the foundation and the further endowment of the institutions popularly known as agricultural colleges, and a life-sized likeness of Hon. William H. Hatch, M.C., of Missouri, author of the act of 1887, establishing the agricultural experiment stations, at least one in every State.

Adjoining the central space of the exhibit, are four working laboratories. Two of these are chemical laboratories, one being equipped as a model for college instruction, and the other specially fitted for original investigation or station work. Chemists are in attendance, who daily conduct and explain to visitors various processes of chemical analysis. The simple work of students with re-agents is illustrated, and on successive days, for example, analyses are made of milk, cereals, fodders, fertilizers, soils and water, with tests for food adulterations and poisons. The other two laboratories are similarly furnished, officered and managed, to illustrate, respectively, both college and station work in botany and plant physiology, and in zoology especially incident to entomology and dairy work. The numerous forms of bacteria recently discovered in milk and its products are kept in "pure cultures," and frequent demonstrations are made by the peculiar effects of these low and invisible forms of life upon milk and butter.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

Beware of Imitations. NOTICE AUTOGRAPH OF Stewart Hartshorn ON LABEL AND GET THE GENUINE HARTSHORN

SHORTHAND and SPANISH taught by mail. Send for cir. W. G. CHAFFEE, Oswego, N. Y.

A CHANCE TO MAKE MONEY. Salary and Expenses paid, or commission if preferred. Salesmen wanted. No experience needed. Address, stating age, H. W. FOSTER & CO., Nurserymen, Geneva, N. Y.

Pineapple and Farming Lands,

New Section of Country.

The Indian River, Lake Worth, and Biscayne Bay Country, on the East Coast of Florida,

Is now being opened up by the construction of a new railroad, and by the improvement and connection of the rivers along the coast, making a continuous waterway for steamboat navigation of 326 miles in length.

These two new transportation lines will give this section unexcelled shipping facilities, and the climate is unsurpassed. The Florida Coast Line, Canal and Transportation Company owns large bodies of land along the East Coast, which will have the full benefit of this new transportation.

This land is now offered for sale.

For full information apply to the offices of The Canal Company, St. Augustine, Florida.

FOR SALE. The farm of the late David M. Hamilton, near Coxsackie, Greene County, N. Y. About 254 acres. Convenient distance to railroads, to Hudson River and to postoffice. Well watered and wooded. Plenty of fruit. Land in excellent condition. Well fenced and easily worked. Buildings good. Very desirable for gentleman's country place. Sale to close estate. Address Executors David M. Hamilton, Coxsackie, N. Y.

TREES FRUIT and ORNAMENTAL.

SMALL FRUITS, GRAPES, SHRUBS, ROSES, HARDY PLANTS, BULBS, FOR FALL PLANTING. Immense Stock. 160 page Catalogue Free. ELLWANGER & BARRY, Mt. Hope Nurseries, Rochester, N.Y. —53d YEAR.—

REID'S SMALL FRUITS, TREES, VINES, ROSES, ORNAMENTALS.

REIDS Greatest Success "Timbrell Strawberry." $500.00 IN GOLD for Best 10 BERRIES. Have you received our Catalogue? If not, why not? Crates and Baskets. New Fruits a specialty. Buy direc and save one-half. Illustrated Catalogue FREE. E. W. REID, BRIDGEPORT, OHIO.

3 Lovely Named Hyacinths,

Different Colors, for blooming in pots, sent by mail, post-paid, For 10 Cents, together with our beautifully illustrated Catalogue of 64 pages, and a sample copy of the Mayflower, 40 pages, elegantly illustrated and containing two magnificent, large colored plates of flowers. OUR FALL CATALOGUE for 1893. A superb work of Art. We offer the finest stock of Hyacinths, Tulips, Crocus, Narcissus, Lilies, Freesias, etc., and scores of rare new Bulbs and Plants for fall planting and winter blooming, also choice Shrubs, Trees and Fruits. It is the most beautiful and complete Catalogue of the kind ever issued.

JOHN LEWIS CHILDS, Floral Park, N.Y.

A Most Remarkable Grape.

Each year's test demonstrated more fully the superiority of the Green Mountain Grape over all others for earliness and fine quality. We are the introducers and are headquarters for this most valuable of all early grapes. Every vine sealed with our trade mark name GREEN MOUNTAIN. Send for free circular giving full information. Agents wanted. Address STEPHEN HOYT'S SONS, New Canaan, Ct.

GRAPE VINES Small Fruits.

All old and new varieties. Extra quality. Warranted true. *Lowest rates.* New Descriptive Catalogue Free. T. S. HUBBARD CO., FREDONIA, N. Y.

3,333,333 ASPARAGUS ROOTS. Largest stock in the U. S. 5 best kinds, Elmira and Columbian White. Write for wants to I. & J. L. LEONARD, Iona, N. J.

ASPARAGUS roots, shade, fruit and nut bearing trees. Catalogue free. S. C. DeCOU, Moorestown, Burlington Co., N. J.

NO MONEY PAYMENT TO BUY A FARM!

Best terms ever offered. I will send the new paper called the FREE Western Settler It tells all about it. Address JOHN SEBASTIAN, Gen. Ticket and Passenger Agent, Chicago, Rock Island and Pacific Railroad, Chicago, Ill.

THOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

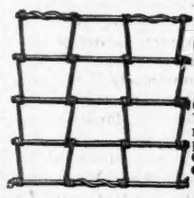
We will furnish the most economical roofing and siding, all styles. Also Metallic Shingles from Iron or Steel with full directions and low prices.

GARRY IRON ROOFING CO., Cleveland, O. Mention Agriculturist.

Pacific Gas and Gasoline Engines

are absolutely safe. The most efficient and economical Engines for running machinery, pumping water, propelling boats, and a thousand other purposes Send for Catalogue and Price List.

GLOBE GAS ENGINE CO., 22 So. 15th St., Philadelphia, Pa.



$10.00 FOR A MACHINE to weave your fence at 25 CENTS PER ROD.

Cross wires ½ in. to 2 ft. apart. Weaves 30 rods a day. Weaves nicely on side hill. Weaves rat-proof netting. Agents wanted. Catalogue free. Address. Carter Wire Fence Mch. Co. Box 16, Derby, Ohio.

"LISTEN TO THE" tale of **FLORIDA** Profit and loss. Advantages and drawbacks in our monthly "Florida Homeseeker," telling of an ideal township and climate. High, healthful land. Freedom from Frosts, Swamps and Malaria, 25 clear lakes. Cheap homes sold on $1.00 (and up) per month. Cheap transportation to settlers and prospectors. Cheap and good Hotel board. Free boating, etc. Oranges, Lemons and Pineapples our Staples. Summer is here delightful. No negroes, no liquor Sample paper free. Hundreds buying. Write now. O. M. CROSBY, Editor, Avon Park, Fla.

VIRGINIA,

ALBEMARLE COUNTY,

The great fruit, grain and stock-raising section of the State. Winters mild and short. Scenery beautiful. Health fine. Near the great markets. Educational advantages unsurpassed.

Land Good! Prices Cheap! Taxes Low! Farms and City property for sale. Write to SAM'L B. WOODS, Charlottesville, Va.

LAND.

If you want a good FRUIT, GRAIN or STOCK FARM, I have a lot of land that I wish to sell. Can not use in my business. Write me at once for a complete list. C. G. CLOUD, Banker, McLeansboro, Ills.

Contents of this Number.

Animal Ailments....584
Basket, Our....578
BOYS AND GIRLS:
Joe's Cry-Baby Sister (James E. Tower)....3 *Illus.*..571
A Monkey Naturalist (Dr. Eugene Murray Aaron....572
A Clever Ruse (Mrs. Mary J. Prickett)....573
One Lesson of the Times (Herbert Myrick)....574
His Bump of the Ridiculous....574
Phenomena in Vegetation (Elizabeth Marabout) *Illustrated*..574
John's New Baby Carriage....574
Lasting Monuments....575
Eels by the Bushel (Henry D. Taylor)....575
Puzzle, Our October....575
Columbian Prize Description, The....575
Bulbs, Flowering, for the House and Lawn (Prof. L. R. Taft)....561
Bulbs, Fungi Injurious to (Dr. B. D. Halsted)..4 *Illus.*..553
Columbian Agricultural Exhibit....590
Columbian Exposition, Forestry at the (James K. Reeve)....*Illustrated*..561
Corn, American Broom (F. G. Hawkinson)....556
Corn Fodder, Digestibility of....588
Corn House, a Plan for a.... ....*Illustrated*..565
Corn, The Problem of....582
Crops of the Year, The....582
Crops, Other Staple....582
Cottage, A Convenient Rural (D. Comings)....4 *Illus.*..549
Cotton Crop, A Small....582
Egg Record, the Importance of the (J. Whildin)....550
Farmers of Russia, the Peasant (Frank G. Carpenter) 4 *Illustrations.*.558
Farming in Foreign Lands....588
Feed Chest, A Safety....552
Fence Posts....564
Fences, Highway....579
Fertilizer, Muck as a....579
Foreign Trade, a Change in Our....580
Grapevines, Protecting....578
Grasses, Value of the Prairie (D. E. Fuller)....4 *Illus.*..557
Harness, Proper Care of....554
Hay, New Classification for....585
Hops, Situation of....585
Horses of the New York Fire Department) Dr. A. S. Heath)....*Illustrated*..546
HOUSEHOLD:
Change as a Medicine (D. Webb)....566
Suggestions for the Nursery (Palmetta Montclair)...566
Wild Wood Beauties (Alice Chittenden)....566
A Kitchen Porch....566
For the Dining Table....566
Hints for Those Who Build (E. R. Flint)....566
A Pretty Dress for a Child....*Illustrated*..567
Parents Who Forget....567
Husk Mats....*Illustrated*..567
Ventilate the Cellar in Winter....567
Birch Bark Handkerchief Case....*Illustrated*..567
Helps for the Dairy Woman (M. W. Early)....567
Girl's Guimp....*Illustrated*..567
How to Disinfect....567
A Kitchen Convenience....*Illustrated*..567
Wall Decoration....568
How to Fit a Crush Girdle....*Illustrated*..568
A Pretty Needle-Book....*Illustrated*..568
Night Dresses....*Illustrated*..568
Care of Grain Sacks (Nellie Burns)....568
Pennsylvania Apple Butter (Dr. George G. Groff) *Illustrated*..569
Veranda Cushions and Pillows (Alice Chittenden)....569
Between the Seasons....570
Lamp Shades (Palmetta Montclair)....570
How to Give Old Clothes (Mrs. E. H. Cooper)....570
What the Cook Says....570
Irrigation in Arizona....576
Kerosene Emulsion for Sheep Ticks (J. S. Woodward)....547
Lambs, Indigestion in (Henry Stewart)....555
Lathyris Silvestris, or Flat Pea (O. Clute)....2 *Illus.*..563
Leghorns, Buff (H. S. Babcock)....*Illustrated*..551
Lettuce Culture in the South (Samuel A. Cook)....554
Library Corner, Our....586
Matters of Business....587
Near and Far....576
Osier and Other Willows (H. Nicholas Jarchow)....547
OUR LITTLE FOLKS:
Little Boy Jim (Frances H. Perry)....*Illustrated*..575
Elsie's First Day at School (E. Louise Liddell)....575
Paint and Oil as Preservatives....554
Potatoes, Winter Storage of (F. B. Van Orman)..*Illus.*..564
Poultry Yard, October in the....550
Prices, The Outlook for....582
Rothamsted Jubilee, The....580
Science in Farming....588
Sheep Raising in New Zealand....576
Stock, Fall Feeding of Young....560
Stock, Shelter the....550
Timber Supply, The....578
Topics of the Times....580
Veal and Pork in Normandy (H. Ericus)....555
Wagon, a Useful Husking....552
Weed Destroyer, A Chemical....554
Wheat, Heavy Reduction in....582
Wheat Raising in the Southwest (J. M. Rice)....546
Wheat, Growth and Culture of....588
Winter Gardening....588
Winter Storage of Farm Implements (J. M. Stahl)....547

THE FEARLESS.

The records show this Threshing-machine to be the easiest running and the greatest grain saver of all. Requires only about 1¾ miles travel per hour. For full description, and for the best Straw-preserving Rye-threshers, Clover-hullers, Fanning-mills, Feed-mills, Circular-saw Machines, Land-rollers and Dog-powers, send for **Fearless Catalogue.** For Fodder-cutters, Carriers and Drag-saw Machines, and for information showing "Why Ensilage Pays," send for **Ensilage Catalogue.** Address, MINARD HARDER, Cohoeskill, N. Y.

See That?

That's the mark by which you can always distinguish the good from the bad in Horse Blankets. It's a guarantee of quality, durability—absolute perfection. The 5/A Blankets are made with a view to good looks as well as good service. They make a horse feel better, look better and do better. Ask the dealer for the 5/A Blankets, and don't accept any of the so-called "just as good" kind. 5/A Blankets are made in two styles and you can easily get one to suit you. Always look for this trade mark.

5/A TRADE MARK

Made only by

WM. AYRES & SONS, Philadelphia.

Perkins Steel Mills.

Back Geared and Direct Motion.

STEEL MILLS.

Built for durability and power, Long Shafts, Bearings, Crank Pins; has Graphite Bearings, which take the place of oil, No Climbing Tower.

STEEL TOWERS

20, 40, 50 and 60 feet in height, made of Angle and Channel Steel. Built different from any other make. Each band and brace adds strength to corner post. Every part of *Steel in Mill and Tower perfectly Galvanized.* Get our Catalogue before buying. Address,

PERKINS WINDMILL CO. Mishawaka, Ind

Estab'd] JACKSON BROS. [1852.

N. Y. STATE DRAIN TILE AND PIPE WORKS,

88 Third Avenue, ALBANY, N. Y.

ROUND AND SOLE TILE

Also agents for Akron Salt Glazed Pipe, Fire Brick and Cement.

AMERICAN AGRICULTURIST

—PUBLISHED BY THE—

ORANGE JUDD COMPANY.

A CORPORATION ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK.

Main Offices, 52 and 54 Lafayette Place, New York, N. Y.

WESTERN OFFICE, 504 THE ROOKERY, CHICAGO, ILL.

The Western Office is for the accommodation of advertisers and subscribers in that section. All communications should be sent to the Main Office, New York.

Entered at New York Post office as mail matter of second class.

Terms of Subscription in the United States and British Provinces.

The American Agriculturist is published monthly and is mailed in time to reach subscribers on or before the first of each month.

Terms.—Single subscriptions $1.50 per year or 75 cents for six months, payable in advance. Clubs of five or more $1.00 per year, or 50 cents for six months.

A FREE copy for every club of five for either term.

Remittances.—Money for subscriptions can be sent by postal note, express or post-office money order, registered letter, check or draft; postage stamps accepted for fractional parts of a dollar.

Expiration of Subscriptions.—The date (usually abbreviated) following each subscriber's name which appears on the magazine or wrapper shows to what time your subscription has been paid. Thus: Jan. '93, means that subscription is paid up to January 1, 1893; Feb. '93, to February 1, 1893, and so on.

Renewals.—Six weeks are required after sending money before the date which shows to what time subscription is paid, and which answers for a receipt can be changed. No other receipt is sent unless requested. If at the end of six weeks date is unchanged or any error is noticed subscribers will confer a favor by notifying us.

Discontinuances.—Responsible subscribers will continue to receive this magazine until the publishers are notified by letter to discontinue, when all arrearages must be paid. If you do not wish the magazine continued for another year after your subscription has expired, you should then notify us to discontinue it.

Change of address.—When a change of address is desired both the old and the new address should be given.

New Subscriptions can commence at any time during the year and with any number desired.

Canvassers wanted in every town to solicit subscriptions. Terms sent on application.

Rates to Foreign Countries.

The yearly subscription of the AMERICAN AGRICULTURIST in shillings and pence to subscribers in foreign countries is as follows:

	s.	d.	U.S. cur
Africa except Egypt, Liberia and Congo, Natal and Transvaal	10	3	$2.46
China	11	3	2.70
Madagascar	10	3	2.46
St. Helena	10	3	2.46

Countries in the Universal Postal Union, including Newfoundland, Egypt, Liberia, Congo, Natal, and Transvaal, and all others not mentioned above, 7s. 9d.; United States currency, $1.86.

In clubs of five or more a discount of 50 cents, or two shillings one penny, is allowed on each subscription.

Merchandise.—(Premium articles), except printed matter is unmailable to Foreign Countries.

Books offered by us as premiums in connection with the AMERICAN AGRICULTURIST are mailable to all countries in the Postal Union.

Postage 36 cents, or 1s. 6d., for the AMERICAN AGRICULTURIST for one year must be added to the advertised price of same when taken in combination with a premium book in all Postal Union countries.

Remit by post-office money order, payable to AMERICAN AGRICULTURIST, at New York General Post Office, and inclose the money order with your letter to avoid delay and possible loss. Drafts on New York are acceptable in the absence of any other form of remittance.

Foreign Agencies.

The following Agents are authorized to accept subscriptions and advertising orders:

KEGAN PAUL, TRENCH, TRUBNER & CO., 57 Ludgate Hill, London, England.

JOHN IRELAND, Pietermaritzburg, Natal, South Africa.

JOHN H. EVERY, Dunedin, Otago, New Zealand.

WM. MADDOCK, 381 George street, Sydney, New South Wales, South Australia.

WM. HOPKINS, Rockhampton, Queensland, Australia.

Advertising Rates.

Ordinary Pages, $1.00 per line (agate), each insertion.
Last Page, and Third Cover Page, $1.25 per line.
Second Cover Page, $1.50 per line.
Page next to Reading and Last Cover Page, $2.00 per line.

Reading notices, set in nonpareil type, to go under the heading "Business Notices," or at the end of a column of reading with "adv." affixed, $2 per line count.

No advertisement taken for less than $3.00 each insertion. Fourteen agate lines make one inch.

Discounts.

On ten (10) lines and upwards, 3 months, five per cent.; 6 months, ten per cent.; 9 months, fifteen per cent.; 12 months, one year, twenty per cent.

On forty (40) lines and upwards, 3 months, ten per cent.; 6 months, fifteen per cent.; 9 months, twenty per cent.; 12 months, one year, twenty-five per cent.

Discount on Space Contracts.—100 lines, ten per cent.; 250 lines, fifteen per cent.; 500 lines, twenty-five per cent; 1,000 lines, thirty per cent.

—o—

Direct all Business Communications pertaining to Subscriptions and Advertising to

AMERICAN AGRICULTURIST,

52 and 54 Lafayette Place, New York.